RAND PROJECT
RANDSBURG, KERN COUNTY, CALIFORNIA

FINAL
ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

VOLUME I
(CHAPTERS 1 THROUGH 14)

State Clearinghouse Number 93042054

APRIL 1995

County of Kern
Planning Department
Bakersfield, California

Bureau of Land Management
Ridgecrest Resource Area
Ridgecrest, California

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UNITED STATE DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

LEAD FEDERAL AGENCY
AUTHORIZATION TO PRINT

RAND PROJECT

FINAL
ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT

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California Desert
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RAND PROJECT

RANDSBURG, KERN COUNTY, CALIFORNIA

FINAL ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

VOLUME I

US Department of the Interior, Bureau of Land Management, California Desert District, Ridgecrest Resource Area

County of Kern, California

Environmental Impact Statement Number CA065-NEPA94-04
State Clearinghouse Number 93042054

Abstract:

The Rand Project is the extension of the life of existing mining operations at Rand Mining Company's (RMC's) Rand Mine, for an additional nine (9) to ten (10) years, which would result in the mine operating until approximately 2006, with mining occurring at the existing rate of an average 45,000 tons per day and use of new facilities to process the ore; the continuation of the existing water use for an additional nine (9) to ten (10) years; the continuation of associated exploration activities; the implementation of wildlife impact reduction measures; and the implementation of reclamation activities, all located in eastern Kern County, California. The project area (private and public lands under RMC's direct and indirect holdings) is comprised of 2,520 acres, with the public lands administered by the Bureau of Land Management. Precious metals, mainly gold, would continue to be recovered from the ore using conventional heap leach methods. At the completion of the mine operations, approximately 511 acres would have been disturbed by the Rand Project, in addition to the approximately 761 acres which has been disturbed by previously approved RMC operations. Issues identified during the public scoping process, evaluated and analyzed in this document include geology, topography, wildlife, vegetation, water resources, air quality, visual resources, socioeconomics and noise. Potential impacts would be mitigated by the project design or as a modification of the Proposed Action to prevent unnecessary and undue degradation. Additional mitigation may be related to specific conditions of approval associated with the approval of the Conditional Use Permit, Plan of Operations, Report of Waste Discharge and Authority to Construct.

Action Required:

Kern County: Approve Conditional Use Permit for a mining operation and Reclamation Plan

Bureau of Land Management: Approve Plan of Operations and Reclamation Plan

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, California 93555-4436

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RAND PROJECT
KERN COUNTY, CALIFORNIA

FINAL ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT
State Clearinghouse No. 93042054

LEAD AGENCIES:

U.S. Department of the Interior
Bureau of Land Management
Ridgecrest, California

County of Kern
Bakersfield, California

Enclosed for your review and comment is the Final Environmental Impact Statement/ Environmental Impact Report (Final EIS/EIR) for the proposed Rand Project. This Final EIS/EIR is a revision of the Draft EIS/EIR that was previously distributed and should be used in place of that document.

The proposed Rand Project would be operated as a open pit, heap leach precious metals mine located in the Rand Mountains, in eastern Kern County, California. The project area is comprised of public land administered by the Bureau of Land Management (BLM) and private lands under the jurisdiction of Kern County.

To facilitate the environmental review, the document has been prepared to meet both the Federal requirements under the National Environmental Policy Act (NEPA) and the State requirements under the California Environmentally Quality Act (CEQA). The Final EIS/EIR has been prepared by Environmental Management Associates, Inc. of Brea, California under the direction of the BLM and Kern County. The Final EIS/EIR will be used by the BLM and Kern County to independently decide on the discretionary actions being required. The BLM Record of Decision will be available approximately 30 days after the Final EIS/EIR is released. The County will make a decision following a public hearing scheduled in May, 1995.

Further information regarding these activities may be obtained by contacting:

Kern County Planning Department
2700 M. Street, Suite 100
Bakersfield, California 93301

ATTN: Glenn Barnhill

Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, California 93455
ATTN: Ahmed Mohsen

Comments on the environmental document will be accepted by the BLM through May 29, 1995. Testimony with regard to the document may be submitted to the County in writing prior to the County public hearing, or orally during the public hearing. We appreciate your interest in your public lands and your commitment to participating in the review process

Joseph Fontana, Acting
Lee Delaney
Area Manager, Ridgecrest Resource Area
Bureau of Land Management

Date April 28, 1995

EXECUTIVE SUMMARY

RAND MINING COMPANY
RAND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT
VOLUME I

EXECUTIVE SUMMARY

INTRODUCTION

Rand Mining Company (RMC) has proposed the development of the Rand Project, which is a proposal to extend existing operations at three (3) adjacent, approved, open-pit, heap-leach mine projects (known as the Yellow Aster Mine-Descarga Project, the Lamont Mine Project, and the Baltic Mine Project) by: mining additional gold and silver ore and waste rock at the current average operating rate of approximately 45,000 tons per day; continuing the existing water use for an additional nine (9) to ten (10) years; constructing facilities to process the additional ore and stockpile the additional waste rock; continuing associated exploration activities; and continuing implementation of wildlife impact reduction measures and reclamation activities. The project area consists of approximately 2,520 acres of unpatented lode and placer mining claims on public lands administered by the U.S. Bureau of Land Management, Ridgecrest Resource Area Office of the California Desert District (BLM) and private land. The BLM is the lead agency with respect to compliance with the National Environmental Policy Act (NEPA) and the Kern County Planning Department is the lead agency for compliance with the California Environmental Quality Act (CEQA).

The purpose of this document is to analyze the impacts of the two (2) identified reasonable alternatives, including the proposed project, so that decision-makers will have adequate information on which to base their decision to approve or deny the Rand Project or the other alternative. The decision will be made using, in part, the information presented in this Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR). This Final EIS/EIR for the Rand Project has been prepared in two (2) volumes which together comprise a stand-alone document. Volume I of the Final EIS/EIR contains Chapters 1 through 14; and Volume II contains the appendices.

Background

The Rand Project 2,520-acre area of operations includes RMC's previously approved mining operations in the northeastern Rand Mountains. These operations include: the Yellow Aster Mine-Descarga Project area; the Lamont Mine; and the Baltic Mine, all of which are located within the project area boundary. RMC has also conducted exploration activities in this same area. RMC initiated activities in the Randsburg area in 1984 by acquiring the Yellow Aster Mine and developing a pilot test facility in the Descarga area. The Lamont Mine commenced operations in 1986, followed by the Yellow Aster Mine in 1989 and the Baltic Mine in 1993. RMC's mining and exploration activities are ongoing, and constitute the majority of mining activities currently being conducted in the northeastern Rand Mountains area. Approximately 761 acres of surface disturbance are associated with RMC's previously approved operations within the Rand Project area.

The objective of the Rand Project is to profitably mine ore, process this ore to recover precious metals, and reclaim the project area. The proposed operations are required to comply with the standards and procedures in the BLM regulations for surface mining of public land under the general mining law. These regulations recognize the statutory right of mineral claim holders to explore for and develop federal mineral resources and encourage such development. The proposed operations are also required to comply with the Surface Mining and Reclamation Act (SMARA) of 1975, which is applicable to all current mining operations located within the State of California. Kern County is the Local Lead Agency that will implement the SMARA. Identified Project impacts will be addressed as conditions of approval associated with Kern County's approval of the conditional use permit (CUP) and Reclamation Plan. These conditions will either appear as mitigation measures identified by this environmental document to avoid potentially significant impacts related to development of the project or as specific conditions of approval to ensure compliance with SMARA and Chapter 19.100 (Surface Mining Operations) of the Kern County Zoning Ordinance.

Project Location

The previously approved RMC operations and the proposed Rand Project area are located in eastern Kern County, California, approximately 40 miles northeast of Mojave, 25 miles south of Ridgecrest, and one (1) mile south of Randsburg, within Sections 34 and 35, Township 29 South, Range 40 East, and Sections 1, 2, 3, 10, 11, and 12, Township 30 South, Range 40 East, Mount Diablo Baseline & Meridian (MDB&M). RMC's existing groundwater production wells, which would also be used for the Rand Project, are located six (6) miles northeast of Koehn Lake in the northeast portion of the Fremont Valley in Sections 18 and 21, Township 29 South, Range 40 East and Section 12, Township 29 South, Range 39 East, MDB&M. The pipeline from these wells to the project area is located in Sections 12 and 13, Township 29 South, Range 39 East and Sections 17, 18, 20, 21, 27 and 28, Township 29 South, Range 40 East, MDB&M.

PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The Rand Project is a proposal to extend existing operations at three (3) adjacent, active, open-pit, heap-leach mine projects by: mining additional gold and silver ore and waste rock at the current average operating rate of approximately 45,000 tons per day; the continuing existing water use for an additional nine (9) to ten (10) years; constructing facilities to process the additional ore and stockpile the additional waste rock; continuing associated exploration activities; and continuing implementation of wildlife impact reduction measures and reclamation activities.

The proposed Rand Project would consist of the following components: continued development and expansion of the three (3) existing open pits (Yellow Aster, Baltic, and Lamont); development of an associated satellite deposit; development and/or expansion of two (2) waste rock stockpiles; development of two (2) heap leach facilities; development of two (2) mineral recovery plants; and other ancillary facilities. Activities under the Proposed Action would commence in 1995, and would terminate in approximately 2006, extending the existing mine life by nine (9) to ten (10) years. Reclamation activities would then continue until the year 2012. Sixty (60) million tons

of ore would be leached on sites located in Lamont Valley and the Descarga area. Seventy-two (72) million tons of waste rock would be deposited at an expansion of the West Valley waste rock stockpile and the new Lamont Valley waste rock stockpile. Portions of the proposed Rand Project would occupy land that has been previously disturbed by both RMC's ongoing operations and by surface and underground mining and prospecting operations which began in the 1890's. The proposed Rand Project would encompass a maximum of approximately 511 acres of new surface disturbance associated with the expansion activities.

The construction of many of the ancillary facilities which would normally be required for a mining operation of the size and type of the Rand Project would not be necessary because RMC's existing ancillary facilities located within the project area would be utilized. Additional manpower requirements would be approximately eight (8) employees. The Proposed Action would result in the approximately $17,600,000.00 in current annual expenditures for payroll, taxes and local purchases continuing for an additional nine (9) to ten (10) years.

The reclamation goals of the Proposed Reclamation Plan are consistent with the land use goals for the area, which are future mining, wildlife habitat, recreation and sheep grazing. The post-mining goals and objectives for reclamation of the Rand Project area are to return the land to a similar land use, to ensure public safety, and to prevent unnecessary or undue degradation of the federal and private lands during operations and until reclamation is successful. The reclamation procedures proposed for the Rand Project incorporate six (6) basic components:

- Establishment of stable topographic surface and drainage conditions that are compatible with the surrounding landscape and serve to control erosion.

- Establishment of soil conditions most conducive to the development of a stable plant community through stripping, stockpiling and reapplication of suitable growth material.

- Revegetation of disturbed areas, using native plant species, in order to establish a long-term productive biotic community compatible with proposed post-mining land uses. The vegetative cover would be capable of self-regeneration without the long-term dependency on irrigation, soil amendments or fertilizers.

- Consideration of public safety through stabilization, removal, and/or fencing of structures or land forms that could constitute a public hazard.

- Minimization of the outward regrading or reshaping of slopes to reduce further impacts to undisturbed wildlife habitat.

- Consideration of the long-term visual character of the reclaimed area.

To accomplish this, RMC would reclaim the 511 acres of surface disturbance associated with the Rand Project, as well as 64 acres of existing disturbance from the Lamont and Descarga Projects not covered by existing SMARA reclamation plans. In addition, RMC would reclaim 37 acres of historic off-site surface disturbance in the surrounding area, probably in the Rand or El Paso Mountains, for which there is no responsible party to conduct the reclamation.

Reclamation activities would be bonded by the BLM and Kern County and by the California Regional Water Quality Control Board - Lahontan Region (CRWQCB-LR). The CRWQCB-LR bond would be for the neutralization of the heap leach facility and would be in the amount of $2,063,012.50, as estimated by RMC. The reclamation bond, which would be held by the BLM and Kern County, would be in the amount of $432,682.50, as estimated by RMC.

<u>No Action Alternative</u>

The No Action alternative would occur if either or both the BLM and/or Kern County rejected the Proposed Action and did not approve the Plan of Operations or Conditional Use Permit, which includes the reclamation plan for RMC's proposed (and some past) activities within the project area. As a result, RMC would be unable to conduct mining activities for the Rand Project as outlined in the Proposed Action. Development of the currently defined precious metal resource under the Proposed Action would not occur; however, existing operations would continue as presently approved.

The U.S. Department of Interior's surface mining regulations (43 CFR 3809) and current BLM policy contain provisions allowing for mineral exploration and extraction

on public lands, as long as they are operated in an environmentally sound manner and do not cause unnecessary or undue degradation of the public resources. The BLM has the responsibility under the Federal Land Policy and Management Act and its regulations to ensure that appropriate state and federal laws, such as the Endangered Species Act and the National Historic Preservation Act, are complied with; that the proposed operation does not cause undue or unnecessary degradation of the federal lands; and that the operator provide for reclamation of disturbed areas. The BLM can disapprove the proposed project expansion and exploration activity only if it would violate statutory standards to prevent undue or unnecessary degradation. The BLM is then required to describe changes in the proposed activity needed to meet those standards.

AFFECTED ENVIRONMENT

Minerals History

The original Yellow Aster Mine was located in 1895 and operated until approximately 1942. Subsequent to the start of mining operations in the Rand Mining District, the Stringer Mining District was created from the south and eastern portions of the Rand Mining District. Gold producing operations within this district included the Baltic and others. RMC initiated activities in the Randsburg area in 1984 by acquiring the Yellow Aster Mine and developing a pilot test facility in the Descarga area. The Lamont Mine commenced operations in 1986, followed by the Yellow Aster Mine in 1989. RMC acquired the Baltic Mine Project in 1990 from Echo Bay Minerals and began operations in 1993. Since that time, exploration activities conducted by RMC have resulted in the delineation of additional ore reserves. These new reserves are present mostly within and adjacent to the Yellow Aster pit area, but are also present within and adjacent to the Baltic and Lamont open pits. One (1) additional satellite orebody is also present to the west of the Lamont open pit.

Physiography and Geology

The topography of the northeast portion of the Rand Mountains is rugged to rolling. Elevations range from 1,900 feet above mean sea level (AMSL) in Fremont Valley west

of the project area to 4,741 feet AMSL at Government Peak on the western boundary of the project area. Topography of the project area consists of roughly east-west trending ridges with intervening valleys. The elevation of the project area varies from 3,300 feet AMSL in the northern portion of the project area to 4,741 feet AMSL at Government Peak.

The project is located in southeast California within the Mojave Desert Geomorphic Province of the Basin and Range Physiographic Province. The northeast portion of the Rand Mountains consists largely of the Atolia Quartz Monzonite of Mesozoic age and the Rand Schist of Precambrian Age. These units have been intruded or covered by Tertiary age volcanic rocks of andesitic, latitic and rhyolitic composition. Subsequently, clays, sandstones and conglomerates of the Paleocene Epoch mantled the older units at lower elevations on the east side of the project area. Quaternary alluvium has been deposited in the major valleys north and south of the project area.

The project is located in a structurally complex area. The Garlock Fault Zone is approximately six (6) miles northwest of the project area and the San Andreas Fault Zone is approximately 61 miles to the southwest. The project area is within a county-designated seismic hazard IV area. The 100-year maximum probable earthquake which could most significantly impact the project area would be a magnitude 7.0 earthquake on the Garlock Fault, with a probable peak acceleration (ground shaking) in the project area of approximately 0.35 gravity.

Soils

A soil inventory of the 2,520-acre project area identified and mapped 12 soil units (see Appendix C). Approximately 761 acres of surface disturbance currently exists as part of RMC's previously approved operations within the Rand Project area. From this disturbance approximately 130,000 cubic yards of topsoil have been stockpiled at various locations within the project area. The dominant soil map units identified from the mapping are generally representative of relic paleosoils which formed under moist conditions, as compared to the arid conditions of the current climate. Approximately 50 percent of the soils in the undisturbed portion of the project area have surface horizons of between three (3) and six (6) inches and a total soil depth of between

ten (10) and 20 inches, and approximately 40 percent of the soils in the undisturbed portion of the project area have surface horizons of between six (6) and nine (9) inches and a total soil depth of between 20 and 40 inches.

Surface Water Hydrology

Drainages in the northeastern portion of the Rand Mountains are ephemeral, with creeks and drainages mainly fed by precipitation from winter storms and summer thunderstorms. The project area is located in the Golden Valley Basin and the Fremont Valley Basin. The calculated 100-year/24-hour storm event in the area is approximately 3.5 inches of precipitation (see Appendix E). Surface flows from precipitation events flow through the project area and are routed around certain process components. No site-specific information on the quantity of the surface flows is available. No springs or seeps are located in the project area.

The surface water quality is affected by the natural conditions of the area, as well as the ongoing mining operations and development activities. RMC has sampled and analyzed materials mined from the ongoing operations to assess the potential toxicity for those materials to affect surface water quality. All materials sampled have an excess basicity, as a result have a low acid generating potential and, therefore, are not likely to contribute acidic drainage to the surface waters. The Soluble Threshold Limit Concentration (STLC)-deionized water analyses of the waste rock and ore-grade materials for the Rand Project were below STLC values (see Chapter 2).

Groundwater Hydrology

Within the project area, mineral exploration drilling has encountered groundwater only at great depths: 1,440 feet below original surface and 640 feet below the proposed pit floor in the Yellow Aster pit and 640 feet below original ground surface and 200 feet below the pit floor in the Baltic pit. Drilling to depths greater than 700 feet below original ground surface have not encountered groundwater below the Lamont pit. No domestic water wells are located within or adjacent to the project area; however, two (2) wells, the Oasis and Airport wells, are located near the project area. The Oasis well is not used, and the Airport well is currently use for irrigation purposes. The nearest

domestic water wells are located approximately six (6) miles northwest of the project area, northeast of Koehn Lake in the Fremont Valley. RMC presently has four (4) water wells which currently produce an annual average of 400 gpm.

Groundwater supply wells for the project are located northwest of the project area in the northeast Fremont Valley, in that area lying northeast of Koehn Lake. The Fremont Valley is a 200-square mile, northeast-southwest trending, structurally-controlled valley to the west and north of the project area. The valley is bounded on the southeast by the Rand Mountains, on the northwest by the El Paso Mountains, and on the northeast by a set of low hills. The elevation of the valley floor varies from 1,900 feet AMSL at Koehn Lake to approximately 3,300 feet AMSL on the alluvial fans adjoining the bordering mountain ranges. Groundwater storage capacity in 1976 for the entire Fremont Valley was estimated at 4.8 million acre-feet, and groundwater storage above the 500-foot depth, excluding the saline water under Koehn Lake, was about two (2) million acre-feet. The U.S. Geological Survey (USGS) has estimated the groundwater recharge in the area southwest of Koehn Lake in the Fremont Valley at 9,500 acre-feet per year from precipitation, runoff from the surrounding mountains and underflow from the southwest (Koehler, 1977). The U.S. Geological Survey (USGS) indicates that the area northeast of Koehn Lake does not receive any recharge from underflow and receives only a very small amount from stream runoff; therefore, nearly all the recharge is confined to the area southwest of Koehn lake.

Two (2) water districts are currently pumping potable water from the Fremont Valley: the Rand Communities Water District (RCWD) in the northeastern portion of the valley; and the Antelope Valley-East Kern Water Agency in the southwestern portion of the valley. The districts are separated by Koehn Lake, which is an ephemeral lake or playa. Groundwater use in Fremont Valley is predominantly from agricultural users southwest and, to a lesser degree, immediately northeast of Koehn Lake. Water use from the aquifers northeast of Koehn Lake also includes the existing RMC wells, the RCWD wells, and other mineral development operation wells to the southeast of the RMC wells.

Wells drilled southwest of Koehn Lake typically yield 1,500 gpm (see Appendix E), while wells drilled northeast of Koehn Lake generally yield between 300 and 1,000 gpm.

Based on measurements taken during the last four (4) years the depth to groundwater in the northeastern portion of the Fremont Valley ranges from 240 to 560 feet below ground surface (bgs). Static water levels in well RMC #4 and the RCWD wells during April, 1994 ranged from approximately 325 to 375 feet bgs. The groundwater gradient in the northeastern portion of the Fremont Valley is variable due to variations in aquifer characteristics, but in general is to the southwest at approximately 0.03 foot per foot. The northeastern portion of the Fremont Valley can be considered an isolated portion of the overall Fremont Valley groundwater basin.

RMC currently pumps an annual average of approximately 400 gpm (576,000 gpd) from their wells for use in heap leaching and dust control at their Yellow Aster, Baltic, Lamont and Descarga facilities. During hot summer months, when water consumption is highest, production increases to an average of 580 gpm. In cool winter months, production falls to as low as 220 gpm. As water consumption from these existing RMC operations would be expected to decrease beginning in fiscal year 1997, these operations would be expected to consume an average of approximately 190 gpm for the remaining 6-year mine life. The two (2) RCWD wells, located approximately two (2) miles south of well RMC #4, pump at approximately 100 gpm for ten (10) hours per day (60,000 gpd). The RCWD operates only one (1) well at a time, alternating wells on a monthly basis. The RCWD wells are completed with screened intervals from 300 to 547 feet bgs and from 450 to 590 feet bgs in wells RCWD-1 and RCWD-2, respectively. The pump for RCWD-2 is set at approximately 450 feet bgs and it is assumed that the pump in RCWD-1 is also set at 450 feet bgs.

As many as six (6) agricultural irrigation wells located immediately to the northeast of Koehn Lake and approximately five (5) miles southwest of the RMC wells are also presently producing groundwater. These wells produce an average of 5,000 gpm (7,200,000 gpd). In addition, there are other wells in the northeast portion of the Fremont Valley which produce for mining operations. A well located in the NE¼ of Section 21, Township 29 South, Range 40 East, MDB&M, is intermittently used by Boral Resources for their asphalt plant; the well produces approximately 21 gpm (30,000 gpd). The four (4) wells located in the NW¼ of Section 22, Township 29 South, Range 40 East, MDB&M are used by Consolidated Placer Dredging for their placer mining operation; three (3) of the four (4) wells produce a total average of approximately

150 gpm (216,000 gpd). The potential recharge of CPD is 75 percent of the total pumpage by their three (3) wells. Therefore, CPD operations have a net potential groundwater usage of approximately 37.5 gpm. All other wells have intermittent, minor production.

Over the period 1958 to 1976, groundwater levels in the aquifers in the southwestern portion of Fremont Valley fell a maximum of 240 feet due to the large use of groundwater for agricultural activities. The northeast part of the Fremont Valley is not utilized as extensively for agriculture, and historical water level data has showed lower rates of water table decline. Limited data from northeastern Fremont Valley wells indicates water table declines in the vicinity of well RCWD-1 of approximately 30 feet over 30 years, or approximately 1.0 foot per year between 1953 and 1976. After 1979, well RCWD-1 continued to decline at a rate of 1.0 foot per year, while well RCWD-2 declined at a rate of 3.0 feet per year.

Hydrologic modeling of the northeastern Fremont Valley was recently completed, and was performed to evaluate the impacts of RMC groundwater withdrawals, along with valley's other groundwater wells, on the northeastern Fremont Valley aquifer in general, and the RCWD wells in particular. Field investigations conducted for the modeling included water level measurements, and groundwater sample collection in June, 1993; drilling, constructing and developing a 1,007-foot deep observation well in May, 1994; and performing a 12-hour constant discharge aquifer test of well RMC #4. The modeling was performed on 6-year, 12-year and 16-year time periods using a MODFLOW numerical model. Four (4) case scenarios were deployed in the modeling: Case 1 evaluated the effects of the existing RMC groundwater production, assumed RMC pumpage ceased after six (6) years and did not include regional pumpage; Case 2 evaluated the effects of the proposed Rand Project groundwater withdrawals for a 16-year period and also did not include regional pumpage; Case 3 evaluated the effects of the existing RMC water production for six (6) years, in conjunction with regional pumpage continuing for 16 years; and Case 4 evaluated the effects of the Rand Project and regional pumpage over a 16-year period.

The projected water table decline at the well RMC #4, based on the Case 1 existing groundwater withdrawals after six (6) years, was predicted to be 2.8 feet. The impact to

the RCWD wells after six (6) years was predicted to be 1.3 feet; and 0.3 feet of decline attributed to RMC pumpage, after 16 years. Less than one (1) foot of drawdown was calculated at the remaining modeled wells in the northern Fremont Valley due to the existing RMC water withdrawal rates (Case 1). Modeling Case 3 (which is Case 1, Current RMC production, plus all other current regional groundwater production) indicated that, under current conditions which would have RMC ceasing groundwater production in six (6) years, drawdown at well RMC #4 would be 41.7 feet after 16 years, while at the RCWD wells drawdown would be 44.4 feet after 16 years. As can be seen by camparing the results of Case 1 and Case 3, this is due mostly to current pumpage from the valley's other existing wells. At the end of 16 years, 4.4 feet and 51.8 feet of drawdown was calculated at the Consolidated Placer Dredging (CPD) and agricultural wells respectively.

Because the static water level is approximately 70 feet above the pumps in the RCWD wells (Hambrick, 1994), the current rate of water table decline from RMC groundwater pumpage in the northeast Fremont Valley will not likely impact the production from the wells in the short to intermediate term.

Chemical data on the quality of groundwater in the northeastern Fremont Valley is limited, but indicates that three (3) types of groundwater are present which include: a magnesium-sulfate-type water and a sodium-magnesium-sulfate-type water in the portion of the aquifer north of the Garlock fault; a sodium-sulfate-type water and a sodium-bicarbonate-type water in the central portion of the area; and, a sodium-chloride-type water and a sodium-sulfate-type water in the southwestern portion of the area. Groundwater with high concentrations of dissolved solids is present but generally limited to shallow groundwater in the area of Koehn Lake. Measurements of dissolved solids from these high salinity waters are on the order of 50,000 to 100,000 ppm. Better quality groundwater, with lower concentrations of dissolved solids, is present below the lower quality groundwater in the area of Koehn Lake, as well as to the northeast and southwest of Koehn Lake. Measurements of dissolved solids from these waters are on the order of 500 to 1,000 ppm.

Meteorology and Air Quality

The climate of the area is characterized by hot, dry summers and mild, dry winters with local variations due to elevation and slope aspects. Temperature extremes can vary up to approximately 40° F throughout the year from the warmest average maximum temperature to the coldest average minimum temperature. Winters are cool with temperatures in the 50s during the day and dropping into the 30s or less at night. Summer temperatures can rise into the 100s during the day, approximately 66 days per year, and drop into the 60s at night. Maximum average rainfall in the Randsburg area is approximately 5.66 inches per year. Weather data collected at China Lake, located approximately 25 miles north of the project area, indicate that strong surface winds with a prevailing speed of 15 knots or greater can be expected 15 days per year. Strong gusts of 40 knots or more can be expected ten (10) days per year.

The air quality of the project area is generally good due to the limited population of the area, the absence of concentrated industrial activity and the lack of natural emission sources. PM_{10} is the main pollutant of concern and high winds or increased surface disturbance can elevate PM_{10} concentrations. No data are available for PM_{10} concentrations in the immediate project area. Air toxics emitted from the existing RMC projects have been conservatively assessed as potentially contributing to a maximum of 0.67 additional cases of cancer per one (1) million population (as measured over an assumed 17-year span of the proposed project), an increase which the Kern County Air Pollution Control District defines as not significant (see Appendix F).

Vegetation and Range

The project area is located within the creosote bush scrub vegetation community. Common perennial species in this community include creosote bush, mormon tea, burrobush and blackbush. In addition, bladder sage, cholla, beavertail and articulated and non-articulated Joshua trees are present. A portion of the project area, extending from the westerly and southwesterly portions of the Rand Project boundary, is within the designated Rand Mountains/Fremont Valley Management Area (USDI, 1993).

Red Rock Poppy, a subspecies of the Little Golden Poppy and a Category 2 federal candidate species (Harris, 1994), was identified in three (3) locations in Section 1, Township 30 South, Range 40 East, MDB&M, within the Baltic area of operations in the early 1990's during years with above average precipitation. Because of the current drought conditions, the re-identification of these populations has been hampered; however, the identification of the locations of populations of the Red Rock Poppy southeast of the Baltic Pit and Little Gold Poppy north of the mine offices have been made in 1994.

The project area is located entirely within the Cantil Common Allotment, which has been used for sheep grazing for approximately 130 years. Fifteen (15) permittees graze sheep in common in the allotment (Sjaastad, 1994). Because this allotment is an ephemeral allotment, the permitted use of the allotment varies year-to-year depending on the annual forage production. Grazing in the allotment was not allowed from 1989 through 1990 and 1992 due to below-average precipitation and, therefore, limited forage production and for desert tortoise protection. Grazing was allowed in the allotment during 1991 through 1993, but, only in that portion of the allotment north of the Garlock Road. The area south of the Garlock Road, which includes the project area, was excluded from grazing to protect desert tortoise habitat.

Wildlife

The various wildlife species which have been observed in this habitat are typical of the central Mojave Desert; they include resident and migrant birds, small mammals and reptiles. The dominant species include desert cottontail, desert woodrat, coyote, western pipistrelle bat, black-throated sparrow, common raven, red-tailed hawk, chukar, horned lark, barn owl, rockwren, western whiptail lizard, desert spiny lizard, desert tortoise, long-nosed snake, gopher snake and sidewinder.

Observations of sensitive wildlife species include desert tortoise (*Gopherus agassizii*) and Mohave ground squirrel (*Spermophilus mohavensis*). The desert tortoise is a federal and state-listed Threatened species, and the Mohave ground squirrel is a federal Candidate 2 species and state-listed threatened species. The Le Conte's thrasher, a state species of concern, was identified in the project area during a previous field

investigation, but was not observed during the 1993 field study. Townsend's big-eared bat, a federal Candidate 2 species, as discussed below, has also been identified in a few locations within the project area. Other federal and state-listed threatened or endangered species or other sensitive species not identified in the project area, but known to occur in the region, include the golden eagle, ferruginous hawk, northern harrier, prairie falcon, burrowing owl and American badger. None of the biological surveys have indicated the presence of migratory waterfowl. Since 1988, RMC personnel have observed only a few migratory birds at their existing operations. The project is not located on a migratory bird fly-way.

A survey for bats has been conducted over portions of the project area, which included the Baltic Mine area, Lamont Valley area and the West Valley area. One hundred thirty (130) mine openings were surveyed either by entering or observing the entrances after dusk. Of the mines entered (97), only three (3) had guano and none had bats. Of the mines observed (15), Townsend's big-eared bat exited from six (6) mines, small *Myotis* sp. flew in and out of several mines, and western pipistrelles were observed flying. During the survey the distinctive communication sound of pallid bats, a California Department of Fish and Game (CDFG) species of concern, was heard in the vicinity of the shaft in the West Valley area (see Appendix I).

An assessment of the Mohave ground squirrel habitat quality within the project was conducted since the project area lies within the geographic range of the state-listed threatened Mohave ground squirrel. There are, however, no specific studies that provide information on the density of Mohave ground squirrel in the project area. Mohave ground squirrel have been observed on the project area, though none were observed during the 1993 studies (see Appendix H). Mohave ground squirrel may potentially occur on those portions of the project area that are vegetated, and assuming an average density of 15 to 20 animals per square mile, between 24 and 32 individuals may reside on the project area.

A total of 15 live desert tortoise, 22 carcasses (including disarticulated animals), nine (9) skeletal fragments, 89 burrows/pallets, and 16 scat were observed. All observed live desert tortoise appeared to be in good health. Desert tortoise were widely distributed over the project area, but the distribution was uneven, with the highest concentration of

tortoise sign and actual tortoises in the south portion of the project area, in Lamont Valley and the ridge to the south and southeast. The number of carcasses and skeletal fragments are disproportionately high compared to the number of live tortoise. This is probably due to avian predators bringing tortoise into the project area from low-lying areas, which is supported by the high number of carcasses observed on hilltops, ridgelines and steep slopes.

Cultural and Paleontological

A total of 213 historic sites are present within the project area (Parr and Swope, 1994). No prehistoric sites have been found. As documented, the majority of the sites in the area consist of prospect holes, shafts, or adits with low grade ore and/or waste rock piles. As a result of the poor condition of these sites and the limited amount of data they possess, the BLM has determined that none of these sites meet the criteria for inclusion to the National Register of Historic Places.

Visual

The BLM is currently managing the public lands within the project area with a visual resource management (VRM) rating of III. The landscape characteristics of the project area consist of a complex terrain of hills, ridges and valleys that support a creosote bush scrub vegetation community. The landscape color consists of browns, tans and grays. Vegetation colors are generally browns, greens, yellows and tans. Because of the limited vegetation cover, landscape colors meld with vegetation colors from distant view points.

The significant majority of the visitors to the project area are mine employees, contractors, other mine-related personnel and off-highway vehicle (OHV) users. Access to the actual mining operations in the Randsburg area has been limited by the company for safety and security reasons. The project area is not visible from any recreation areas and is only visible from a very limited view one (1) mile southeast of the project area for vehicles traveling north on U.S. Highway 395 and vehicles traveling south on U.S. Highway 395 in Fremont Valley (see Appendix J). Portions of the project area are also visible from County roads to the north and south of Randsburg, particularly for vehicles traveling south from U.S. Highway 395 into Randsburg. The project area is in the

foreground to middleground for visitors on the local roads. Because mine employees and other related persons are the dominant potential viewers, and because of the limited recreational opportunities in the area to attract other viewers besides OHV users, the viewer sensitivity to the visual resources is currently considered to be low to slightly moderate.

Noise

The proposed project area is located in a sparsely populated rural area, with the nearest residences located approximately 500 feet east of the Descarga operations at Randsburg, approximately 3,000 feet southeast of the Baltic open pit at Dog Patch, and approximately 3,000 feet northeast of the Yellow Aster open pit in Randsburg. The principal existing sources of noise in the area are the existing mining operations at the Yellow Aster Mine, Lamont Mine and Baltic Mine operations, sonic booms from military aircraft, vehicle traffic on nearby roads, including U.S. Highway 395, and off-highway vehicle activity. Electrical powerlines, wind and, to a lesser extent, birds and rain showers contribute to the existing ambient noise level. The local terrain is complex, which produces areas in which the noise produced by blasting and large equipment from the existing mining and exploration operations may be sheltered or focused. The existing noise levels are elevated relative to what would normally be expected in a rural desert areas like the project area.

Current RMC mining operations result in identifiable noise patterns, which include engine noise and back-up alarms from haul trucks, engine noise from loaders and other vehicles, blasting, and miscellaneous equipment noise from the process plants, shop and offices. The haul truck engine noise is generally generated during the traveling from the open pits to the waste rock stockpiles and heap leach pads and back to the open pits. The haul truck back-up alarm noise is generally generated at the open pits, waste rock stockpiles and heap leach pads during the loading and unloading of material from the haul trucks. As a result, these noises are generated on a 24-hour per day basis. The noise from blasting occurs once per day, during daylight hours, from one (1) of the three (3) open pits. Noise from loader operations occurs when the haul trucks are filled with material from the open pits; therefore, the noise generation is from within the open pits on a 24-hour per day basis.

The noise generated by these existing operations is typical of most mining projects and could be intense, up to 95 dBA at 25 feet. Blasting can cause very short-duration noise levels in excess of 100 dBA at 25 feet. Assuming an average reduction of six (6) dBA when the distance from a noise source is doubled, the impacts to the nearest residences, which are approximately 500 feet east of the Descarga operations, can range from 63 to 76 dBA adjacent to the outside of the residential structure; and can be in the range for 50 to 60 dBA adjacent to the outside of the residential structures located approximately 3,000 feet northeast of the Yellow Aster open pit. This is a maximum noise level, because as operations progress, a majority of the equipment operations and blasting is occurring below grade in the open pits. The walls of the pits absorb some of the noise and tend to direct the rest of the noise upward, thus reducing the noise levels at the residences. Noise levels in the vicinity of Dog Patch, approximately 3,000 feet southeast of the Baltic open pit, are consistent with the Kern County Noise Element (see Appendix K). Some recreational users and other residents of the area, such as those in Randsburg, Dog Patch and Red Mountain, may be affected by blasting noise, but operational noise likely results in minimal impacts to the human environment.

Land Use and Wilderness

Land use within the project area consists of mineral exploration and development, public recreational use, wildlife habitat and livestock grazing. Mineral activities, wildlife habitat and livestock grazing have been discussed previously above. The project is located within the California Desert Conservation Area in a Class M multiple-use class area. In addition, the project area is located adjacent to and partially within the Rand Mountains/Fremont Valley Management Area (RMFVMA). The Mojave Desert Tortoise Natural Area (DTNA) is located approximately 11 miles southwest of the project area. The project area is also located to the southeast of and partially within the recently expanded Western Rand Area of Critical Environmental Concern (Western Rand ACEC). However, the only portion of the project area actually within the Western Rand ACEC is the existing pipeline right-of-way and wells RMC #1, RMC #2, and RMC #3, with continuation of ongoing pipeline maintenance, and no activities under the Proposed Action would occur within this area. In addition, the BLM is in the process of developing the West Mojave Coordinated Management Plan (Mojave Plan). The Rand Project is also located within lands to be covered by this plan. The Mojave

Plan will be designed to manage critical habitat for the desert tortoise and the Mohave ground squirrel through the designation of seven (7) management areas. The management areas would be subdivided, based on four (4) zones of management activities. The Rand Project area is currently located within an area identified for the continuation of existing types of activities.

The BLM has issued a number of right-of-ways within and surrounding the project area (Hogan, 1994). These include a powerline withdrawal, a powerline right-of-way, two (2) telephone cable right-of-ways, and four (4) telephone line right-of-ways.

The project area is located in an area with Kern County zoning designation NR-20 (Natural Resource District, minimum 20 acres) and A1 (Limited Agriculture District), and the County land use map indicates a Resource designation. Uses allowed under this zoning and land use designation include general agricultural uses, residential uses, resource extraction and industrial uses. Mining activities are allowed in these zoning districts upon issuance of a Conditional Use Permit. One County secondary road and several minor roads cross the project area.

Public recreational use of the Rand Mountains area consists mostly of OHV use, by both individuals and OHV enthusiast organizations (Keeler, 1994). Numerous organized OHV events have been held around the area in the past; however, in recent years the number of these events has been reduced. The unorganized OHV casual use in the area has increased due to restrictive limitations in the surrounding areas. There are approximately 65 miles, or 120 acres, of OHV routes in the northeastern Rand Mountains that are currently used. The approval of the RMFVMA Plan in 1993 established a network of designated OHV routes within the RMFVMA. These designated routes total approximately 22 miles, or 40 acres, of road. Of the remaining 43 miles, or 80 acres, of routes approximately 38 miles, or 70 acres, will eventually be closed under the RMFVMA Plan. The Spangler Off Highway Vehicle Area is located approximate eight (8) miles north of the project area, on the east side of U.S. Highway 395.

Other recreational uses of the area include hunting for chukar, target shooting and minor miscellaneous recreational uses. The nearest public parks are the Johannesburg

city park and the recreation area at the Red Rock Canyon State Park, located approximately 20 miles west of the project area.

The project area is located under the Department of Defense's (DOD)'s R-2508 Special Use Airspace Complex, Specifically the Isabella Military Operations Area (MOA), which permits military aircraft operations as low as 200 feet above ground level. Almost directly east of the project area is the Edwards Air Force Base/Air Force Flight Test Center's Restricted Area R-2515, which permit supersonic and other military activity at all altitudes. Military flight operations, including sonic booms, are considered to be compatible with mining operations currently conducted within the project area.

The closest existing wilderness areas to the project area are the Golden Valley Wilderness, which is approximately 2 miles to the northeast, the El Paso Mountains Wilderness, which is approximately 10 miles to the northwest, and the Grass Valley Wilderness, which is approximately 10 miles to the southeast. There are a total of 15 Wilderness Areas and three (3) Wilderness Study Areas (WSAs) within 60 miles (100 kilometers) of the project area.

Socioeconomics

The nearest population center to the project area is the town of Randsburg, approximately one (1) mile north of the project area. Most services are obtained in Ridgecrest, approximately 25 miles north of the project site. Based on information obtained from the Ridgecrest Chamber of Commerce, Ridgecrest serves a population exceeding 38,000, which includes China Lake, Inyokern, Johannesburg, Randsburg, Red Mountain, Trona, Argus Westend, Kern River Valley Area and Owens Lake Area.

The economy of Ridgecrest has been based principally on support of the Naval Air Weapons Station (NAWS) at China Lake since its establishment in 1943. The NAWS and industries directly related to the NAWS are the major source of employment in the Ridgecrest area (RCC, 1993). Other employers in the area are manufacturing plants, tourism, mining and the government. The existing RMC operations employs approximately 140 individuals as regular employees for the mining, leaching, technical and administrative duties at the existing RMC operations. This provides a total annual

payroll of approximately $6,000,000.00. In addition, RMC pays approximately $200,000.00 per year in property taxes. Approximately $10,800,000.00 in operating and maintenance supplies are purchased from local vendors, and approximately $600,000.00 of power is purchased from the electrical utility, which totals $17,600,000.00 per year. These jobs and the amount of local expenditures result in secondary economic benefits through increased local service employment. Using the BLM's mining employment multiplier for the California Desert area of 2.666, approximately 373 secondary jobs have been created as a result of RMC's existing operations.

Mining and processing operations are currently conducted 24 hours per day, seven (7) days per week, 365 days a year. Most of the salaried staff works one (1) shift per day, five (5) days per week. Thirty-two (32) employees (approximately 25 percent) live locally, in the towns of Randsburg, Johannesburg and Red Mountain. Eighty-seven (87) employees (approximately 60 percent) reside in Ridgecrest and commute to the mine site each day. The other 21 employees (approximately 15 percent) reside in other communities in the regional area and commute to the mine site each day. Because carpooling is prevalent in this area, there are approximately 40 trips per day between Ridgecrest and the other communities in the region and the project site. The traffic is spread over a 24-hour period. Currently the use of U.S. Highway 395 between Ridgecrest and the project area is approximately 4,000 vehicles per day. Traffic from RMC's existing operations is approximately 1.0 percent of the daily use of U.S. Highway 395.

<u>Other Resources</u>

The Proposed Action would not be located: in or adjacent to wilderness areas or WSAs; in an area of prime and unique farmland; in a floodplain; on a wild and scenic river; or in an area of traditional Native American religious concern.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES, MITIGATION MEASURES AND UNAVOIDABLE EFFECTS

A summary of the potential impacts, mitigation measures, and unavoidable effects identified in this EIS/EIR are outlined in the following table. Detailed discussions of the

potential impacts, identified mitigation measures and unavoidable effects are presented in Chapter 5, Environmental Consequences; Chapter 6, Mitigation Measures for the Proposed Action; and Chapter 7, Unavoidable Effects of the Proposed Action, of this EIS/EIR.

Summary of Potential Impacts of the Proposed Action and No Action Alternative, Mitigation Measures for the Proposed Action and Unavoidable Effects of the Proposed Action

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Mineral Resources	• Allow for easier access to deeper mineralization • Affect development of adjacent mineral occurrences • May cover undiscovered mineralization • Removal of 60 million tons of ore and 75 million tons of waste rock	• None of the impacts to mineral resources resulting from expanded mining operations and associated reclamation, including none of the precious metal that would be recovered under the Proposed Action	• No recommended mitigation measures	• Permanent removal of 60 million tons of ore
Physiography and Geology	• Disturb approximately 511 acres • Enlarge existing open pits by 132 acres • Permanent alteration of topography • Facilities potentially affected by seismic activity	• None of the impacts to physiography and geology resources resulting from expanded mining operations and associated reclamation, including none of the reclamation of the pre-RMC historic surface disturbance that would be conducted under the Proposed Action	• No recommended mitigation measures	• Permanent change in topography
Soils	• Disturbance of 511 acres of soil • Erosion during and after mining and reclamation operations • Loss of some soils by incorporation in waste rock stockpiles or burial under waste rock stockpiles and heap leach pads	• None of the impacts to the soil resources resulting from expanded mining operations and associated reclamation would occur	• Surface disturbance shall be the minimum required to construct and operate the project • Topsoil stockpiles shall be designed to minimize the potential of water and wind erosion & have low relief profile • Topsoil stockpiles shall be seeded with a nitrogen-fixing species in the first year of creation	• Some erosion of stockpile and reclaimed surfaces • Permanent burial of lower portions of soil profiles

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Hydrology **Surface Water**	• Minimal sedimentation of ephemeral surface waters • Potential for dilute process waters to be released from process ponds during extraordinary storm event (1,000 year-24 hour event)	• None of the impacts to surface water resources resulting from expanded mining operations and associated reclamation	• Roads shall be crowned and water bars shall be constructed to minimize erosion and sediment production • Topsoil stockpiles shall be seeded with a nitrogen-fixing species or used as test plot sites • An erosion and sedimentation plan shall be developed and shall be subject to review and approval by the BLM and Kern County in order to minimize sedimentation resulting from surface water impacts.	• Some erosion and sedimentation

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Groundwater	• Additional watertable decline in the vicinity of well RMC #4 of approximately 5.5 feet after 16 years • Additional watertable decline in the vicinity of the RCWD wells of approximately 4.1 feet after 16 years • Potential to degrade identified groundwater in project area • Consumption of an average of 345 gpm for 16 years • Temporary pit lakes, up to 7 feet depth may be created as a result of precipitation events.	• None of the impacts to the groundwater resources resulting from expanded mining operations and associated reclamation	• RMC shall conduct a monitoring program of the production from, and water levels in, the RMC production and observation wells, as outlined in the groundwater monitoring program attached to the EIS/EIR. • The data acquired from this monitoring program shall be submitted annually by RMC to the BLM and Kern County. • RMC shall annually compare the water level data collected by the monitoring program to the water levels predicted by modeling and attached to the groundwater monitoring program attached to the EIS/EIR. In the event that the monitoring program shows a 200-percent difference between the actual data and the model results, RMC shall have the model reevaluated using the information gained during the monitoring program to determine what effect RMC's pumping has had on the water resource and the effect of RMC's future pumping would have on the resource. An assessment, based upon the data, shall be made of the effect RMC's pumping has on the geohydrologic environment.	• Consumption of groundwater

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Groundwater con't			• If the Rand Community Water District (RCWD) should determine that remedial action is necessary to mitigate the effects of a static water table decline in either well RCWD #1 or well RCWD #2, RMC shall contribute to the funding of the remedial action in an amount directly proportional to the amount of water RMC has pumped from the northeastern Fremont Valley as compared to the total amount pumped from the northeastern Fremont Valley by all groundwater producers over the applicable time period. RMC shall place the required funds into an escrow account when requested by the RCWD once RCWD has provided the following information to the satisfaction of the Kern County Planning Department: 1) well monitoring information to demonstrate RCWD #1 or well RCWD #2 has fallen to a level indicating a need for remedial action; 2) the budget for the proposed remedial action; and 3) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period.	

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Groundwater con't			The required funds deposited into the escrow account shall be disbursed to the RCWD upon request once the RCWD has provided the following information to the satisfaction of the Kern County Planning Department: 1) the total cost of the remedial action; and 2) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period.	
Meteorology and Air Quality	• PM_{10} emissions from surface disturbing activities, mining and ore processing operations • An increase in the emission of air toxics (principally associated with the PM_{10} emissions) • An increase in the calculated individual cancer risk (MICR) to the surrounding population from 0.67 in a million to 2.8 in a million (a level which is still defined by the KCAPCD as not significant).	• None of the impacts to air resources resulting from expanded mining operations and associated reclamation	• Disturbed surfaces no longer needed for project activities shall be timely reclaimed • Program to minimize fugitive dust emissions	• TSP/PM_{10}/air toxics emissions during operations

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Biology Vegetation Resources	• Disturb 511 acres of creosote bush vegetation community • Permanent loss of 132 acres of vegetation community	• None of the impacts to the vegetation resources resulting from expanded mining operations and associated reclamation	• Minimize additional surface disturbance, including new roads, by accessing drill targets by overland travel • Salvage and stockpile juvenile joshua trees, golden cholla and beavertail • Provide opportunities for nurseries and others to salvage all other joshua trees prior to construction activities • Monitoring and reporting of any previously undiscovered Red Rock Poppy populations shall be conducted in accordance with standard BLM procedures during the ongoing vegetation monitoring under the Proposed Reclamation Plan	• Short-term and long-term loss of vegetation
Range Resources	• Disturb 511 acres with a potential grazing capacity of 200 to 5,000 lb/acre of forage • Exclude grazing from project area during project life • Permanent loss of 132 acres from grazing use	• None of the impacts to the range resources resulting from expanded mining operations and associated reclamation	• No recommended mitigation measures	• Short-term and long-term loss of forage

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Wildlife Resources	• Direct disturbance to 511 acres of creosote bush scrub habitat • Indirectly affect approximately 2,500 acres of habitat through animal avoidance • A probable incidental take of five (5) desert tortoise through direct mortality and 26 through incidental harassment • Assumed displacement of Mohave ground squirrels from disturbed areas • Wildlife mortalities	• None of the impacts to the wildlife resources resulting from expanded mining operations and associated reclamation, including the anticipated mitigation measures to enhance desert tortoise habitat	• Implement terms and conditions in USFWS biological opinion for protection of desert tortoise and mitigation measures in 1993 biological assessment for protection of Mohave ground squirrel • Impacts shall be minimized by disturbing only that area required to construct and operate the project • Proposed construction and operations shall utilize existing roads and previously disturbed surfaces • OHV traffic shall be restricted in the project area • Shafts shall be fenced or cleared of bats prior to filling • All employees shall be responsible for reporting wildlife mortalities. Monitoring and notification of mortalities shall be submitted to the BLM • Measures shall be taken to immediately mitigate impacts relating to pooling/puddling of cyanide solution • Cyanide solution shall be covered to exclude wildlife • Heap leach pads shall be inspected for conditions which may be used by perching birds and the conditions shall be altered • An alternative fresh water source shall be constructed • Upon notification by the BLM, RMC shall provide access to the project by representatives of the BLM	• Short-term and long-term loss of habitat and individual animals

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RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Cultural Resources	• Direct or indirect impact to 74 historic sites, none of which were judged to be eligible for the National Register • Potential to impact unknown cultural resources	• None of the impacts to cultural resources resulting from expanded mining operations and associated reclamation	• Notify BLM and/or KCPD if unknown cultural resources are identified	• Loss of some sites
Paleontological Resources	• No known paleontological resources and therefore, no impact to known paleontological resource • Potential to impact unknown paleontological resources	• None of the impacts to paleontological resources resulting from expanded mining operations and associated reclamation	• Notify BLM and/or KCPD if unknown paleontological resources are identified during operations	• None
Visual Resources	• Visibility of surface disturbance and project facilities, dust plumes from blasting and fugitive light from night operations • Change in the form, line and color of the landscape and the introduction of additional conical lines	• None of the impacts to the visual resources resulting from expanded mining operations and associated reclamation, which includes the incremental enhancement to the visual resources resulting from the reclamation of pre-RMC historic surface disturbance	• Lights used for mining and ore processing shall have reflectors or shields	• Change in visual character of area
Noise	• Incremental increase in existing noise levels from project-related operations • Noise from project-related activities would occur for an additional nine (9) to ten (10) years • Activities which generate the project-related noise would shift to areas further away from residences	• None of the incremental noise impacts resulting from expanded mining operations would occur as a result of the No Action Alternative	• Blasting shall be limited to daylight hours • All heavy equipment, drill rigs and other internal combustion engines shall employ mufflers • If blasting does not comply with the Kern County noise element, then implement noise reduction techniques	• None

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Land Use and Wilderness	• Limit public access to project area • Elimination of some pre-existing mining related hazards • Limit recreational use of the project area • OHV casual use would be impacted due to road and route closures • Minor noise, visual and air quality impacts to nearby Wilderness Areas • Waste rock stockpiles may eventually be piled higher than 150 feet above preexisting ground surface, but would be no higher than the surrounding ridges and should pose no hazard to low-flying aircraft • Low-flying military aircraft could potentially impact fly rock from the blasts	• None of the land use impacts resulting from expanded mining operations and associated reclamation would occur as a result of the No Action Alternative, including the elimination of some pre-existing mining related hazards	• RMC shall maintain a current standing notice with the China Lake NAWS which indicates the time and days of blasting at the Rand Project. • RMC shall develop an air quality monitoring program with the BLM, Mojave Desert Air Quality Management District and the Kern County Air Pollution Control District	• Limits on other use of area • Limits on recreational use of area
Socioeconomics	• Eight (8) new employees • Approximately $200,000.00 in new annual property taxes and power purchases for nine (9) to ten (10) years and $17,600,000.00 in existing annual payroll, taxes and local expenditures extended for an additional nine (9) to ten (10) years • New secondary employment of 21 individuals for nine (9) to ten (10) years and existing secondary employment of 373 individuals extended for an additional nine (9) to ten (10) years	• Socioeconomic impacts of the No Action Alternative would preclude the generation of approximately eight (8) new jobs, $60,000.00 in additional taxes, $140,000.00 in additional power purchases, 21 secondary jobs, and the early elimination of all existing economic benefits, including the $17,600,000.00 in existing expenditures and 373 secondary employment positions	• No recommended mitigation measures	• Economically beneficial

RESOURCE	POTENTIAL IMPACTS OF THE PROPOSED ACTION	POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE	MITIGATION MEASURES FOR THE PROPOSED ACTION[1]	UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION
Other Resources	• No impacts	• No impacts	• No recommended mitigation measures	• None

1 These mitigation measures are in addition to the impact reduction measures proposed by RMC in the Proposed Action, including the Proposed Reclamation Plan.

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RAND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT/
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CHAPTER 1
INTRODUCTION

1. INTRODUCTION

The Ridgecrest Resource Area of the Bureau of Land Management (BLM) received an amended Plan of Operations (POO) from Rand Mining Company (RMC) in December 1992, and the Kern County Planning Department (Kern County) deemed complete an application for a Conditional Use Permit (CUP) from RMC on March 30, 1993 for the Rand Project, which is a proposal to extend existing operations at RMC's three (3) adjacent, approved, open-pit, heap-leach mine projects (known as the Yellow Aster Mine-Descarga Project, the Lamont Mine Project, and the Baltic Mine Project) by: mining additional gold and silver ore and waste rock at the current average operating rate of approximately 45,000 tons per day; continuing the existing water use for an additional nine (9) to ten (10) years; constructing facilities to process the additional ore and stockpile the additional waste rock; continuing associated exploration activities; and continuing implementation of wildlife impact reduction measures and reclamation activities. The Rand Project is located approximately 40 miles northeast of the town of Mojave, 25 miles south of the community of Ridgecrest (Figure 1-1) and approximately one (1) mile south of the town of Randsburg in the eastern portion of the County of Kern (Figure 1-2).

1.1. Purpose and Need

The purpose of RMC's Rand Project is to extend the operating life of the existing gold and silver open pit mining and heap leach operations located on both public and private lands south of Randsburg, California. The objective of the Rand Project is to profitably: mine the ore, process the ore to recover precious metals, and reclaim the project area. The project area is approximately 2,520 acres, of which 855 acres are private land and 1,665 acres are unpatented lode and placer mining claims on public lands administered by the BLM (Figure 1-3) (see Chapter 14, Glossary, for definitions of selected terms). A total of approximately 511 acres of surface disturbance would occur if the Proposed Action is approved; 106 acres on private land and 405 acres on public land. The proposed Rand Project includes the expansion of the existing Yellow Aster, Baltic, and Lamont open pits, and the

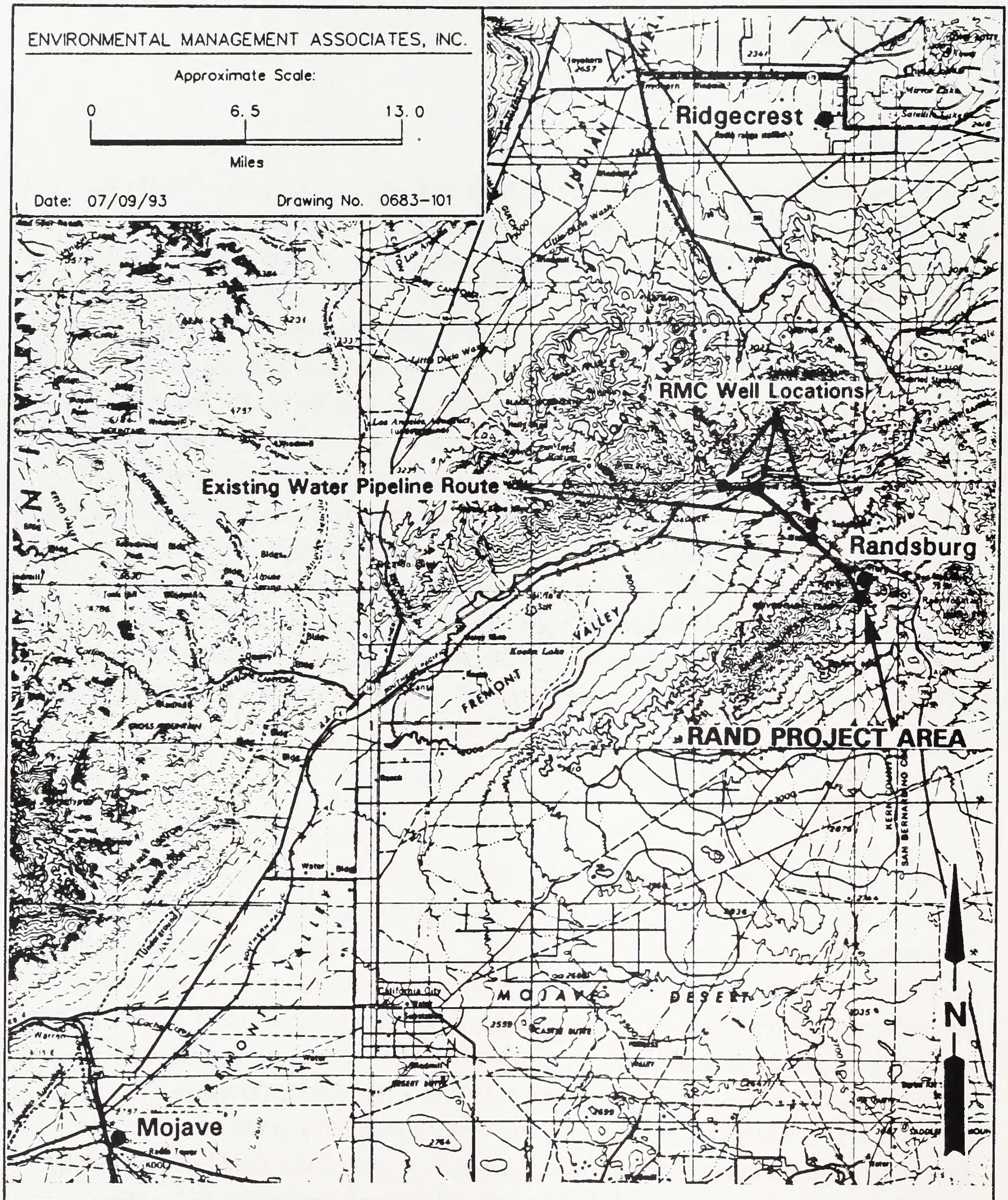
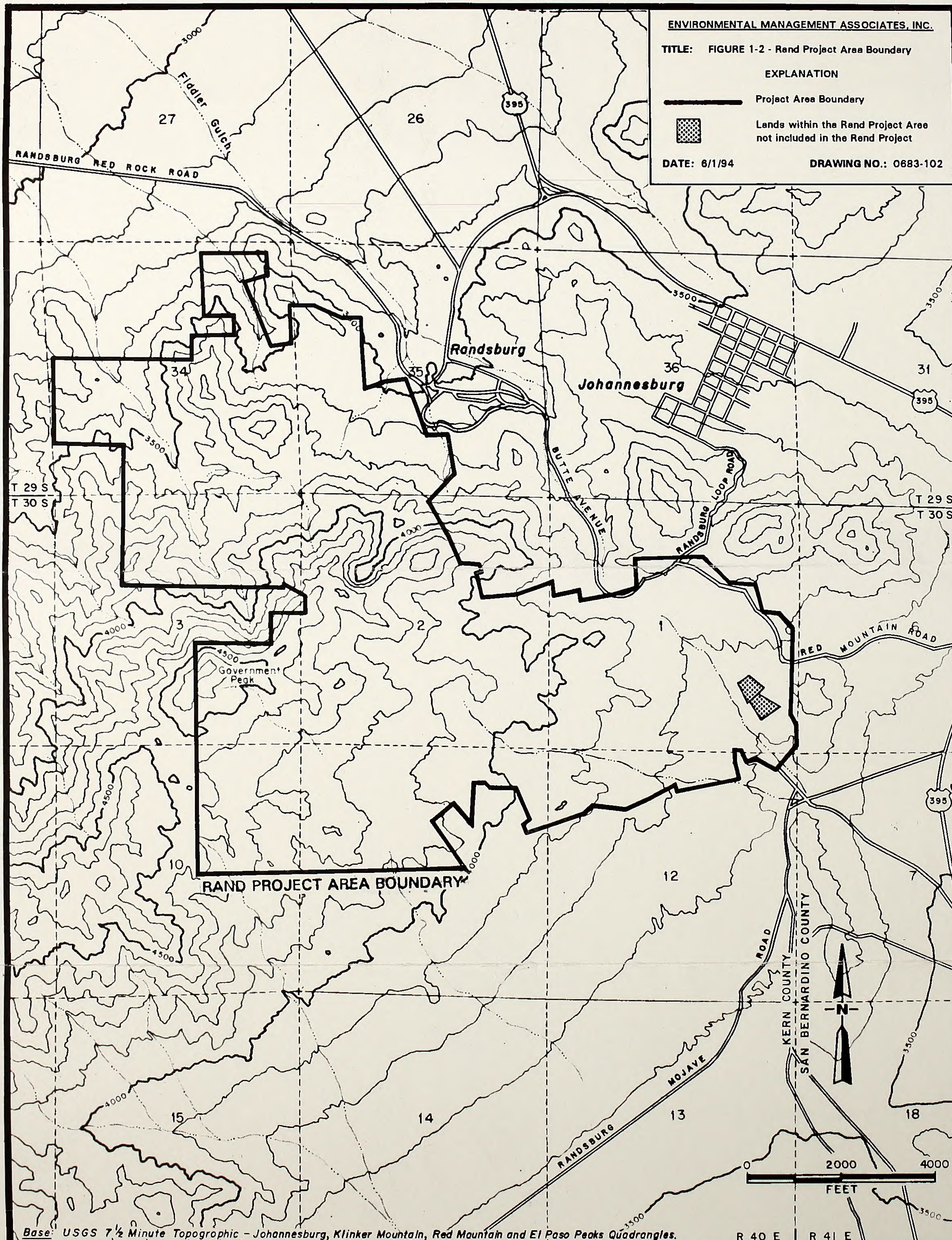
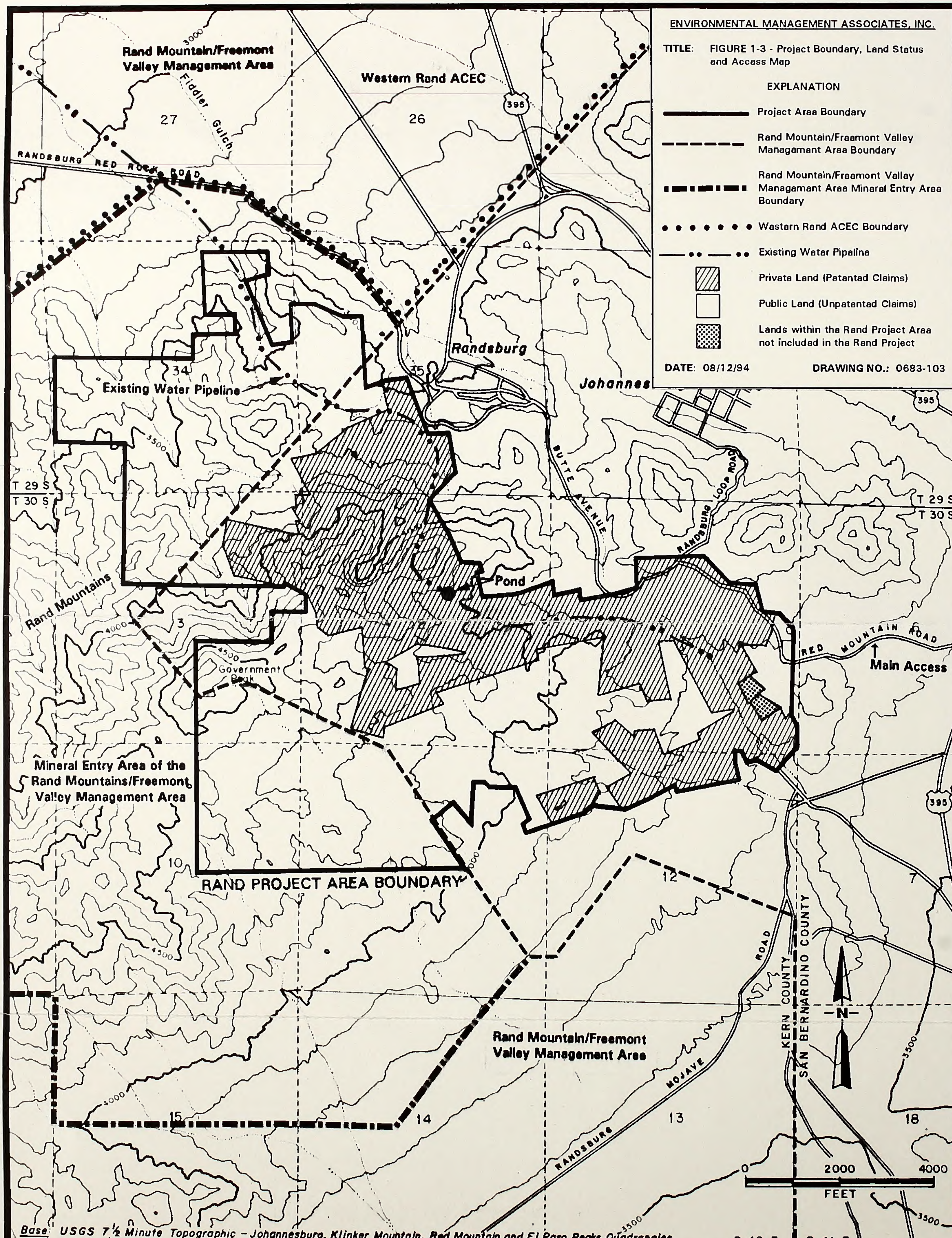


Figure 1-1: General Project Location Map


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 1-2 - Rand Project Area Boundary
EXPLANATION
Project Area Boundary
Lands within the Rand Project Area not included in the Rand Project
DATE: 6/1/94
DRAWING NO.: 0683-102
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
395
T 29 S
T 30 S
R 40 E
R 41 E
27
26
34
35
36
31
3
2
1
6
10
12
7
15
14
13
18
N
0
2000
4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 1-3 - Project Boundary, Land Status and Access Map
EXPLANATION
Project Area Boundary
Rand Mountain/Freemont Valley Management Area Boundary
Rand Mountain/Freemont Valley Management Area Mineral Entry Area Boundary
Western Rand ACEC Boundary
Existing Water Pipeline
Private Land (Patented Claims)
Public Land (Unpatented Claims)
Lands within the Rand Project Area not included in the Rand Project
DATE: 08/12/94
DRAWING NO.: 0683-103
Rand Mountain/Freemont Valley Management Area
Western Rand ACEC
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannes
Existing Water Pipeline
BUTTE AVENUE
RANDSBURG LOOP ROAD
Pond
Rand Mountains
Government Peak
RED MOUNTAIN ROAD
Main Access
Mineral Entry Area of the Rand Mountains/Freemont Valley Management Area
RAND PROJECT AREA BOUNDARY
Rand Mountain/Freemont Valley Management Area
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
FEET
0
2000
4000
N
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

development of new facilities, including, a satellite ore deposit, two (2) waste rock stockpiles, two (2) heap leach pads, and other additional processing facilities. The proposed project would mine an additional 60 million tons of ore and 72 million tons of waste rock from the three (3) pit expansions and satellite deposit. The ore would be processed at the existing and proposed heap leach recovery facilities, extending the life of the ongoing operations by an estimated nine (9) to ten (10) years, which would result in the mine operating for approximately 12 years, or until approximately 2006; reclamation activities would then continue until the year 2012. The existing manpower and general mine operations would be relatively unaffected, increasing the current number of employees by only eight (8) individuals.

1.2. Environmental/Regulatory Compliance

1.2.1. Regulatory Requirements

As part of the permit process, RMC has submitted, or will submit, applications for the necessary permits to construct and operate the Rand Project. Table 1-1 lists the various permits/approvals which are required to construct and operate the Rand Project, the agency which issues the permit/approval, and the status of the permit/approval process. Since the BLM has determined that the Rand Project may affect the desert tortoise, a federally threatened species, compliance with the Endangered Species Act of 1973, as amended (ESA), is required. The ESA prohibits the "take" (e.g., killing, harming, or harassment) of a listed species without special exemptions. Section 7(a) of this Act requires that federal agencies responsible for authorizing projects that may adversely affect a listed species or adversely modify critical habitat designated for that species formally consult with the U.S. Fish and Wildlife Service (USFWS). To facilitate compliance with Section 7 of the ESA, RMC has committed to implement, as a part of the Proposed Action, the terms, conditions and prescribed impact reduction measures contained in the USFWS Biological Opinion issued for the Rand Project, and would also implement the impact reduction measures to reduce inadvertent harm to desert tortoises and Mohave ground squirrel similar to those agreed to by RMC and the California Department of Fish and Game (CDFG) for RMC's Baltic Mine Project to protect the desert tortoise (USDI, 1992; page 2-43).

Project compliance with the Migratory Bird Treaty Act (16 USC 701-718h) is also required. The Migratory Bird Treaty Act makes no provisions for the killing of migratory birds without a permit, so a zero (0) mortality objective regarding wildlife shall be maintained. Migratory bird mortality through cyanide toxicosis may be prevented at heap leach extraction facilities through the initial design of structures which deny birds access to toxic solutions.

Compliance with National Historic Preservation Act is also required through the completion of the Section 106 process. As part of the Section 106 process, the State Office of Historic Preservation (SHPO) has reviewed and concurred with the BLM determination for cultural resources.

1.2.2. Scope of Environmental Review

This EIS/EIR has been prepared under the direction and supervision of both Kern County and the BLM. This EIS/EIR assesses the potential environmental effects of the Rand Project as proposed by RMC, and is both a California Environmental Quality Act (CEQA) document and a National Environmental Policy Act (NEPA) document. It was prepared in accordance with CEQA guidelines for the preparation of an EIR (14 California Code of Regulations (CCR) 15000-15387), Kern County guidelines for the preparation of an EIR, BLM mining regulations (Title 43 Code of Federal Regulations (CFR), Section 3809), the Council of Environmental Quality's (CEQ's) regulations for implementing NEPA (Title 40 CFR 1500-1508), and BLM guidelines for implementing NEPA (USDI, 1988). This EIS/EIR was prepared by a third-party contractor, Environmental Management Associates, Inc. (EMA), using information gathered from Kern County and BLM files; conversations with Kern County and BLM resource personnel; information gathered from other federal agencies, state agencies, local agencies, and public literature; and information provided by RMC, its consultants and interested individuals.

Table 1-1: Permits Required for the Rand Project and Their Status

AGENCY		PERMIT NAME	PERMIT STATUS
Bureau of Land Management	Ridgecrest Resource Area	Plan of Operations	Decision Pending Completion of EIS/EIR
		Right-of-Way	Decision Pending Completion of EIS/EIR
Kern County	Planning Department	Conditional Use Permit/ Reclamation Plan	Decision Pending Completion of EIS/EIR
	Department of Health Services	Hazardous Waste Site List Verification	Completed
	Air Pollution Control District	Authority to Construct	Preparation of Application Ongoing
		Permit to Operate	Application to be Submitted After Commencement of Operation
Bureau of Alcohol, Tobacco and Firearms		User of High Explosives	Existing
California Regional Water Quality Control Board	Lahontan Region	Waste Discharge Order	Decision Pending Completion of the EIS/EIR
California Department of Fish and Game		Section 2081 Permit	In Consultation
United States Fish and Wildlife Service		Section 7 Consultation	Completed
State Office of Historic Preservation		Section 106 Process	Completed

This EIS/EIR analyzes the environmental impacts of the Proposed Action, which comprises 511 acres of new surface disturbance within the 2,520 acre project area, as well as the Proposed Reclamation Plan for 573 acres of RMC-created surface disturbance within the project area; measures to reduce adverse impacts to air quality, groundwater resources, soils, visual resources and wildlife including the desert tortoise; and the identified potential alternatives to the Proposed Action and the No Action Alternative. This EIS/EIR also analyzes the cumulative impacts of mining and other activities on the environmental resources of the northeastern Rand Mountains area.

1.2.3. Kern County

The Rand Project is required to comply with the Surface Mining and Reclamation Act (SMARA) of 1975 and the State Mining and Geology Board regulations regarding the reclamation of mining operations on lands within the State of California. These regulations relate to: mining operation and closure; end land use; environmental setting/fish and wildlife habitat; geotechnical requirements; erosion and sediment control; resoiling and revegetation; and administrative requirements. Impacts of the mining operation which need to be addressed will be done by conditions of approval associated with the Lead Agency's (Kern County) approval of the Conditional Use Permit (CUP). These conditions will either appear as mitigation measures identified by this environmental document to avoid potentially significant impacts related to the development of the project or as specific conditions of approval to ensure compliance with SMARA and Chapter 19.100 (Surface Mining Operations) of the Kern County Zoning Ordinance. All required conditions will be identified in a resolution adopted by the hearing body at a regularly scheduled public hearing. The environmental document, resolution, and Staff report prepared for the request, in addition to any material contained therein, will constitute the Lead Agency's response to concerns received from the California Department of Conservation/Division of Mines and Geology (DMG). It is noted that County zoning requirements are not binding on federally owned land, except that the submitted Proposed Reclamation Plan will be subject to further County review and approval.

1.2.4. Bureau of Land Management Policy and Plans

The proposed operations, as outlined in the POO submitted to the BLM by RMC, are required to comply with the standards and procedures in the BLM regulations for surface management of public land being mined under the general mining law (43 CFR 3809). These regulations recognize the statutory right of mineral claim holders to explore for, and develop, federal mineral resources, and encourages such development. The federal regulations require the BLM to review proposed operations to ensure that: 1) adequate provisions are included

to prevent unnecessary or undue degradation of public lands; 2) measures are included to provide for reclamation; and 3) the proposed operations comply with other applicable federal, state and local laws and regulations.

The project is located within the California Desert Conservation Area (CDCA), which has been identified by Congress in the Federal Land Policy and Management Act of 1976 (FLPMA) as a unique area in need of special management by the BLM. As such, the BLM developed the CDCA Plan in 1980 to implement appropriate management strategies for the use of the public lands and resources within the CDCA. As part of the CDCA Plan, multiple use classes have been assigned to the public lands within the CDCA. The project area is located within a Class M, moderate use, area. Management of a Class M area is "based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development" (USDI, 1980). Surface mining operations are consistent with the Class M designation for the area.

The project area is located adjacent to the eastern boundary of, and partially within, the Rand Mountains/Fremont Valley Management Area (RMFVMA). The management plan for the RMFVMA, as described in the RMFVMA Plan, dated April, 1993, is directed towards ensuring that a viable population or populations of the desert tortoise continue in the RMFVMA. The portion of the Rand Mountains to the east of the RMFVMA, which includes the principal portion of the Rand Project area, was not included in the RMFVMA because of the limited amount of public land and low quality of the tortoise habitat (USDI, 1993) (Figure 1-3). The major portion of the Rand Project area located within the RMFVMA mineral entry area is within a 6,080 acre portion of the RMFVMA along the crest of the Rand Mountains which remains land use Class M and continues to allow for mineral entry as well as other use activities.

The existing water supply pipeline that serves the RMC project area from Fremont Valley crosses a portion of the RMFVMA that is designated land use Class L which is located within the expanded Western Rand Area of Critical

Environmental Concern (Western Rand ACEC) (Figure 1-3). A portion of the existing water supply system for the Rand Project area is located within the Western Rand ACEC; however, no surface disturbing activities associated with the Proposed Action are proposed within the Western Rand ACEC.

The BLM is in the process of developing the West Mojave Coordinated Management Plan (Mojave Plan) (Gum, 1993). The Rand Project area is located within lands to be covered by this plan. The Mojave Plan will be designed to manage critical habitat for the desert tortoise and the Mohave ground squirrel through the designation of seven (7) management areas. The management areas would be subdivided, based on four (4) zones of management activity. The Rand Project area is currently located within an area identified for the continuation of existing types of activities (Gum, 1993).

1.2.5. Public Scoping

A Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on April 6, 1993. A Notice of Preparation (NOP) of an EIR was distributed by Kern County on April 17, 1993. A copy of the NOI, NOP and NOP distribution list are included in this EIS/EIR in Appendix A. As a result of distribution of the NOI and NOP, a total of 15 comments were received which addressed both specific and general issues regarding the Rand Project. These comments have been included in the EIS/EIR in Appendix B. A public scoping meeting was held at the Johannesburg Community Center on April 21, 1993. This scoping meeting was attended by the BLM, RMC, EMA and approximately 30 members of the public. At the public meeting several issues were raised by the public and discussed. A summary of these issues is also attached to this EIS/EIR in Appendix B.

1.3. Intended Uses of the EIS/EIR

Mineral exploration and development on public lands are managed under regulations at 43 CFR 3809, Surface Management. The BLM can approve proposed operations provided there is compliance with applicable federal, state and county

laws and regulations. The BLM will use this EIS/EIR, along with other information, in the review of the POO for the Rand Project. The BLM is the Lead Agency for NEPA compliance.

Kern County is responsible for implementation of the California Surface Mining and Reclamation Act of 1975 (SMARA), as amended. Impacts of the mining operation which need to be addressed will be done by conditions of approval associated with the Lead Agency's approval of the Conditional Use Permit. These conditions will either appear as mitigation measures identified by this environmental document to avoid potentially significant impacts related to development of the project or as specific conditions of approval to ensure compliance with SMARA and Chapter 19.100 (Surface Mining Operations) of the Kern County Zoning Ordinance. All required conditions will be identified in a resolution adopted by the hearing body at a regularly scheduled public hearing. It is noted that County zoning requirements are not binding on federally owned land, except that reclamation plans are subject to County review and approval.

As discussed above, there are numerous permits and other approvals required for the Rand Project. A list of the agencies is provided in Table 1-1. These agencies will use this EIS/EIR in their review of those permit applications.

1.4. Project Location

The Rand Project, together with previously approved RMC operations, are located in eastern Kern County, California, approximately 40 miles northeast of Mojave, 25 miles south of Ridgecrest, and one (1) mile south of Randsburg (Figure 1-1). The previously approved operations, as well as the proposed project, are located within Sections 34 and 35, Township 29 South, Range 40 East, and Sections 1, 2, 3, 10, 11, and 12, Township 30 South, Range 40 East, Mount Diablo Baseline & Meridian (MDB&M). The Rand Project area is comprised of both public lands administered by the BLM and private lands. The boundary of the Rand Project area and the land status of the Rand Project area are presented in Figure 1-3. RMC's existing groundwater production wells are located north of Koehn Lake in the northeast portion of Fremont Valley in Sections 18 and 21,

Township 29 South, Range 40 East, MDB&M and Section 12, Township 29 South, Range 39 East, MDB&M. Well RMC #4 is located on private land. The pipeline is located in Sections 12 and 13, Township 29 South, Range 39 East and Sections 17, 18, 20, 21, 27 and 28, Township 29 South, Range 40 East, MDB&M (Figure 1-1 and Figure 2-2). The pipeline crosses both public and private surface and is approved on the public lands under a Federal right-of-way. The road to well RMC #4 is approved under an amendment to the Baltic Mine Project POO.

The preferred access to the Rand Project area is from Red Mountain via the Red Mountain Road, a paved county road (Figure 1-3). Alternative access to the project area is from Randsburg via Butte Avenue. The Rand Project area is located on approximately 2,520 acres and topographically lies between 3,300 feet and 4,700 feet above mean sea level (AMSL) on the northeastern slopes of the Rand Mountains.

CHAPTER 2
DESCRIPTION OF THE PROPOSED ACTION

2. DESCRIPTION OF THE PROPOSED ACTION

This chapter has been prepared in response to and in compliance with the regulations found at 40 CFR 1502.10(e) and 40 CFR 1502.14, and the CEQA guidelines (14 CCR 15124 and 15126(d)). The following sections describe the previously approved operations and the Proposed Action.

2.1. Summary of Activities

2.1.1. Existing Operations Summary

RMC's previously approved mining operations in the northeastern Rand Mountains include: the Yellow Aster Mine-Descarga Project area; the Lamont Mine; and the Baltic Mine. RMC has also conducted exploration activities in this same area. Approximately 761 acres of surface disturbance are associated with RMC's previously approved operations within the Rand Project area. This consists of: 390 acres for the Yellow Aster Mine (including the West Valley waste rock stockpile), which includes 96 acres for the Yellow Aster open pit; 200 acres for the Baltic Mine, including 50 acres for the Baltic open pit; 124 acres for the Lamont Mine, including 47 acres for the Lamont open pit; and 47 acres for the Descarga Project. RMC's existing mining operations consist of the removal of ore and waste rock from the three (3) active, permitted, open pits: the Yellow Aster open pit, the Lamont open pit, and the Baltic open pit. Current operations mine an average of approximately 45,000 tons per day (tpd) of ore and waste. The actual amount of mining occurring in any single open pit at a given time can vary from 0 to 60,000 tpd, depending on operating conditions throughout the entire mining operation. The existing and/or previously approved waste rock stockpiles include the North waste rock stockpile, the South waste rock stockpile, the West Valley waste rock stockpile, and the Baltic waste rock stockpile. The South waste rock stockpile has reached design capacity and is currently not in use and is currently undergoing concurrent reclamation. The existing Yellow Aster, Lamont, Baltic and Descarga ancillary facilities include: offices; a maintenance shop; water supply facilities; power supply facilities; explosives magazines;

chemical storage areas; diesel storage areas; laboratory; roads and right-of-ways; and surface flow and erosion control structures.

2.1.2. Proposed Mine Plan Summary

The proposed Rand Project would consist of the following components: continued development and expansion of the three (3) approved open pits (Yellow Aster, Baltic, and Lamont); new development of an associated satellite deposit; development and/or expansion of two (2) waste rock stockpiles; development of two (2) heap leach facilities; development of two (2) mineral recovery plants; other ancillary facilities; and increased consumption of water from an average of approximately 677 afpy to approximately 800 afpy in 1999 and then decreasing to approximately 437 afpy in 2006. Activities under the Proposed Action would commence in 1995, and would terminate in approximately the year 2006, extending the existing mine life by nine (9) to ten (10) years; reclamation activities would then continue until the year 2012. The proposed project would mine 60 million tons of ore and 72 million tons of waste rock and disturb 511 acres.

2.1.3. Reclamation Plan Summary

The reclamation goals of the Proposed Reclamation Plan are consistent with the land use goals for the area, which are future mining, wildlife habitat, recreation and sheep grazing. The post-mining goals and objectives for reclamation of the Rand Project area are to return the land to a similar land use, to ensure public safety, and to prevent unnecessary or undue degradation of the federal and private lands during operations and until reclamation is successful. The reclamation procedures proposed for the Rand Project incorporate six (6) basic components:

- Establishment of stable topographic surface and drainage conditions that are compatible with the surrounding landscape and serve to control erosion.

- Establishment of soil conditions most conducive to development of a stable plant community through stripping, stockpiling and reapplication of suitable growth material.

- Revegetation of disturbed areas, using plant species adapted to the area, as specified in the revegetation section of the reclamation plan, in order to establish a long-term productive biotic community compatible with proposed post-mining land uses. The vegetative cover would be capable of self-regeneration without the long-term dependency on irrigation, soil amendments or fertilizers.

- Consideration of public safety through stabilization, removal, and/or fencing of structures or land forms that could constitute a public hazard.

- Minimization of the outward regrading or reshaping of slopes to reduce further impacts to undisturbed wildlife habitat.

- Consideration of the long-term visual character of the reclaimed area.

To accomplish this, RMC would reclaim the 511 acres of surface disturbance associated with the Rand Project, as well as 64 acres of existing disturbance from the Lamont and Descarga Projects not covered by existing SMARA reclamation plans. Reclamation activities would be bonded by the BLM and Kern County and by the CRWQCB-LR. The CRWQCB-LR bond would be for the neutralization of the heap leach facility and would be in the amount of $2,063,012.50, as estimated by RMC. The reclamation bond, which would be held by the BLM and Kern County, would be in the amount of $432,682.50, as estimated by RMC.

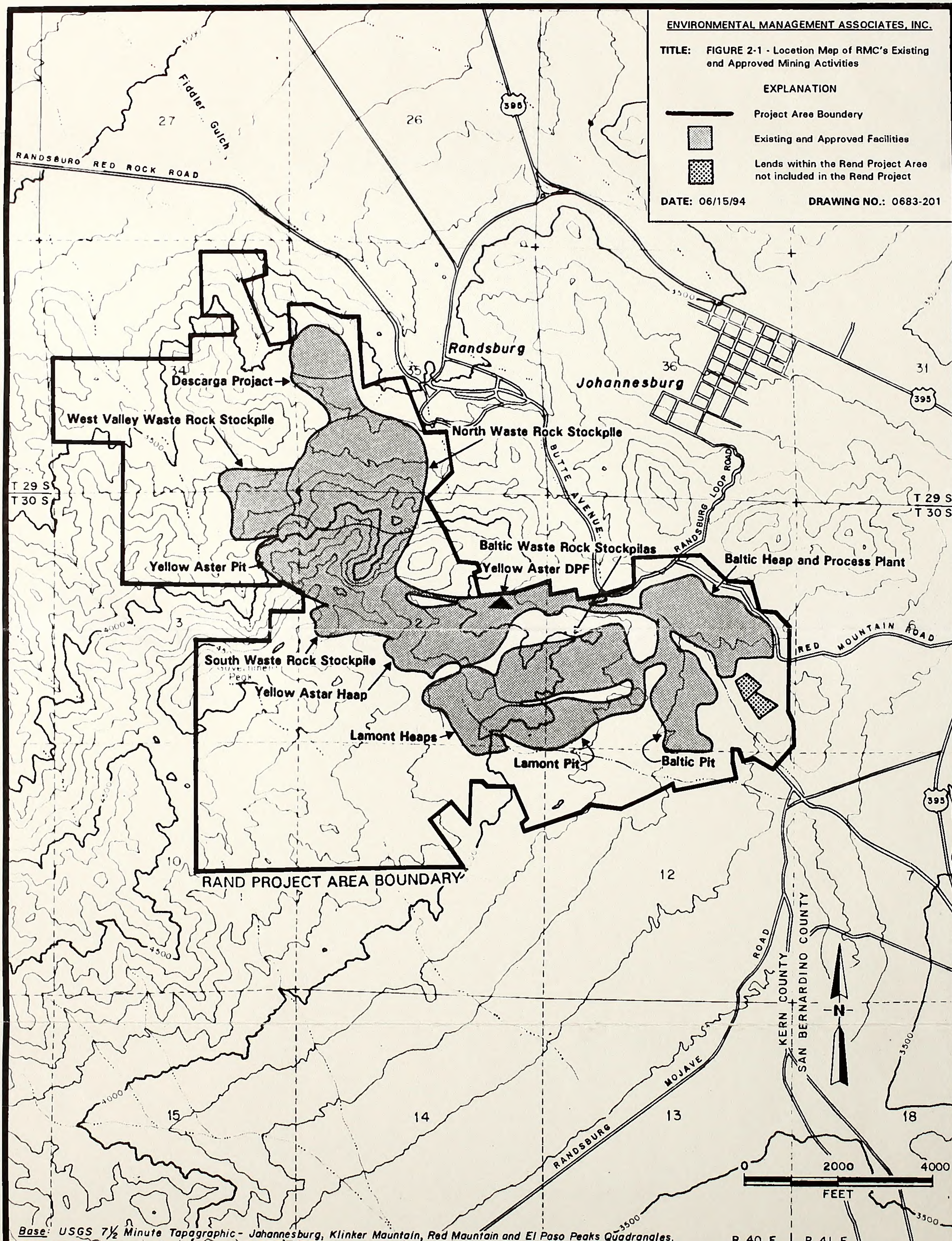
2.2. Previously Approved Operations

RMC's previously approved mining operations in the northeastern Rand Mountains include: the Yellow Aster Mine-Descarga Project area; the Lamont Mine; and the Baltic Mine, all of which are located within the project area boundary shown on Figure 1-3. RMC has also conducted exploration activities in this same area. RMC initiated activities in the Randsburg area in 1984 by acquiring the Yellow Aster Mine and developing a pilot test facility in the Descarga area. The Lamont Mine commenced operations in 1986, followed by the Yellow Aster Mine in 1989 and

the Baltic Mine in 1993. RMC's mining and exploration activities are ongoing, and constitute the majority of mining activities currently being conducted in the northeastern Rand Mountains area. Approximately 761 acres of surface disturbance are associated with RMC's previously approved operations within the Rand Project area. This consists of: 390 acres for the Yellow Aster Mine (including the West Valley waste rock stockpile), which includes 96 acres for the Yellow Aster open pit; 200 acres for the Baltic Mine, including 50 acres for the Baltic open pit; 124 acres for the Lamont Mine, including 47 acres for the Lamont open pit; and 47 acres for the Descarga Project. Figure 2-1 shows the locations of specific components of RMC's previously approved mining operations. Modifications to these approved operations would require additional approvals by Kern County and the BLM, as well as possible other approvals.

2.2.1. Mining

RMC's existing mining operations consist of the removal of ore and waste rock from the three (3) active, permitted, open pits: the Yellow Aster open pit, the Lamont open pit, and the Baltic open pit. Current operations mine an average of approximately 45,000 tons per day (tpd) of ore and waste. The actual amount of mining occurring in any single open pit at a given time can vary from 0 to 60,000 tpd, depending on operating conditions throughout the entire mining operation. The approximate permitted open pit dimensions, including pit floor elevations and estimated groundwater elevations, are shown in Table 2-1. In each pit, the final pit floor elevation is at least 200' above the groundwater level under the pit.



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-1 - Location Map of RMC's Existing and Approved Mining Activities
EXPLANATION
Project Area Boundary
Existing and Approved Facilities
Lands within the Rand Project Area not included in the Rand Project
DATE: 06/15/94
DRAWING NO.: 0683-201
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
Descarga Project
West Valley Waste Rock Stockpile
North Waste Rock Stockpile
BUTTE AVENUE
RANDSBURG LOOP ROAD
Baltic Waste Rock Stockpiles
Yellow Aster DPF
Baltic Heap and Process Plant
Yellow Aster Pit
RED MOUNTAIN ROAD
South Waste Rock Stockpile
Yellow Aster Heap
Lamont Heaps
Lamont Pit
Baltic Pit
RAND PROJECT AREA BOUNDARY
T 29 S
T 30 S
395
KERN COUNTY
SAN BERNARDINO COUNTY
RANDSBURG MOJAVE ROAD
N
0 2000 4000
FEET
R 40 E
R 41 E
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

Table 2-1: Approximate Surface Dimensions, Maximum Depth from the Surface, and Pit Floor Elevations of the Approved Open Pits

PIT	LENGTH	WIDTH	DEPTH	PIT FLOOR (elevation)	WATERTABLE (elevation)
Yellow Aster	3,400'	1,700'	500'	3,900'	2,860'
Baltic	2,100'	1,300'	400'	3,400'	3,200'
Lamont	2,200'	800'	240'	3,620'	<3,260'

The ore and waste rock blasting operations consist of drilling nominal 6½-inch diameter blastholes spaced on approximately 16-foot to 22-foot centers. The rock is blasted with ammonium nitrate-fuel oil (AN/FO) blasting agent at an average powder factor of approximately 0.3 to 0.4 pounds of explosives per ton of rock. Blasting is performed between three (3) and five (5) times per week, usually during the daylight hours. On the morning of the day the blast is scheduled to occur, a notice of the scheduled blast is placed on the public bulletin board next to the post office in Randsburg. Immediately prior to blasting, guards are posted at various lookout points around the project area. When all guards determine the blast area to be secure, the blaster then announces the blast on the mine communication system and the blast is initiated. The blaster then inspects the blast area to determine the blast to be complete and then announces an "all clear" on the mine communication system.

The blasted rock is loaded into 85- to 100-ton capacity trucks. Mined ore is hauled to the heap leach pads. Waste rock is hauled to the waste rock stockpile areas (Figure 2-1). Haulage ramps in the pits are designed with a nominal width of 80 feet and a maximum gradient of 10 percent. Minor sections of temporary ramping may be steeper and narrower. Haul roads are up to 100 feet wide, including berms, shoulders and drainage ditches. A list of the equipment necessary to conduct these operations is presented in Table 2-2.

Table 2-2: List of Existing Mobile Equipment

MINING EQUIPMENT		SUPPORT EQUIPMENT	
2	Blasthole drill rigs	15	Pickups
7	85- to 100-ton trucks	2	2-ton flatbed trucks
3	14-yard (29.2-ton) front end loaders	2	Nominal 12,000-gallon water trucks
1	3-cubic yard (6.5-ton) loader	2	Service Trucks
3	Dozers	1	Lube Truck
2	Graders	1	Tire Truck

2.2.1.1. Yellow Aster Pit

The Yellow Aster open pit is located in the NW¼ of Section 2, Township 30 South, Range 40 East, MDB&M, approximately 4,000 feet southwest of the town of Randsburg. The total permitted surface disturbance associated with the Yellow Aster open pit is approximately 96 acres.

2.2.1.2. Lamont Pit

The Lamont open pit is located in the SW¼ of Section 1 and the SE¼ of Section 2, Township 30 South, Range 40 East, MDB&M, approximately 9,000 feet west of the town of Red Mountain. The total permitted surface disturbance associated with the Lamont open pit is approximately 47 acres.

2.2.1.3. Baltic Pit

The Baltic open pit is located in the south-central portion of Section 1, Township 30 South, Range 40 East, MDB&M, approximately 6,000 feet west of the town of Red Mountain. Permitted surface disturbance associated with the Baltic open pit totals approximately 50 acres.

2.2.2. Waste Rock Stockpiles

The existing and/or previously approved waste rock stockpiles include the North waste rock stockpile, the South waste rock stockpile, the West Valley waste rock stockpile, and the Baltic waste rock stockpile (Figure 2-1). The South waste rock stockpile has reached design capacity and is currently not in use.

The North waste rock stockpile, which is located north of the Yellow Aster open pit, is currently being constructed using terraced techniques. As construction of the stockpile progresses, each subsequent terrace will be constructed below and down the stockpile face from the previous terrace, resulting in a final configuration of the stockpile which will extend to the north, covering and stabilizing the Yellow Aster mill tailings deposited during historic operations. A total of 48 million tons of waste could be stockpiled as part of the ongoing permitted operations.

In addition, waste rock has been, in the past, deposited in the South waste rock stockpile, located to the south of the Yellow Aster open pit. A total of four (4) million tons of waste was stockpiled as part of the ongoing permitted operations.

The West Valley waste rock stockpile is being developed to the west of the Yellow Aster open pit. This stockpile is also being constructed using a terrace configuration and will eventually contain nine (9) million tons of material. As mining progresses at the Yellow Aster open pit, this stockpile will become the primary storage site for waste rock from the Yellow Aster open pit.

The Baltic waste rock stockpile is located to the north of the Lamont open pit and to the west of the Baltic open pit. The current construction technique is the bench method, which will be used to complete the final configuration of the stockpile. Approximately 18 million tons of waste rock will be stored at this waste rock stockpile.

2.2.3. Chemical Characteristics of Mined Materials

Waste rock and ore materials which are mined under the existing operations have been tested for their potential to generate acid solutions (acid potential), as well as acid neutralizing solutions (neutralization potential). To establish an adequate set of baseline data of the mining waste proposed to be disposed of as part of the Rand Project, the following tests were conducted on the ore, waste rock and leached ore samples:

(1) Acid-base potential;
(2) pH;
(3) Total threshold limitation concentration (TTLC);
(4) Soluble threshold limitation concentration (STLC) using the California WET method with deionized water.

The acid-base potential test was conducted to determine whether the materials would be acid generating. The other three (3) tests were conducted to determine the chemical characteristics of potential leachate generated under various conditions.

The sampling and analyses procedures used to characterize the waste generated from the Rand Project were based on the procedures used and approved for the Baltic Mine Project in CRWQCB-LR Board Order Number 6-92-103. The results of the Baltic waste characterization study showed that all materials analyzed had acid-base potentials which indicated excess basicity and an extremely low potential for acid formation. Based on these results, it was determined that the STLC-deionized water extraction method presented the most realistic projection of the environmental fate for these materials. Because the previously approved Baltic Project is a component of the Rand Project, it was determined that the analytical methods appropriate for the Rand Project should be identical to those previously used for the Baltic Project. Additionally, the Baltic Project analyses results have been incorporated into the following waste characterization study.

Six (6) samples were collected from oxidized ore and waste, four (4) samples were collected from mixed oxidation state ore and waste, and four (4) samples were collected from unoxidized ore and waste. An additional six (6) samples were collected as part of the Baltic Mine project. All samples were collected from drill holes; sample elevations ranged from 4,140 feet in oxidized ore to 3,300 feet in unoxidized waste. The sample elevations would include materials at and below the projected pit bottoms (see Table 2-9).

2.2.3.1. Acid-Base Analyses

As part of the acid-base evaluation, total sulfur content of each sample was determined to evaluate the acid generating potential. The neutralization potential of each sample was determined by direct titration. The difference between the two (2) values is expressed in units of tons of calcium carbonate per thousand tons of material analyzed.

Table 2-3 and Table 2-4 present the data from the acid-base analyses of the waste rock, ore and spent ore material. All of the analyzed samples showed excess basicity, which range from >12.5 to 84.82. These values, along with very low sulfur content (maximum value of 0.34 percent in unoxidized rock below projected pit bottom) and high inherent pH (average value of approximately 8.4) indicate a substantial excess of basicity. Even with potential acidic rainfall of pH 5.0, the acidity would be neutralized upon contact with waste rock materials. In addition, despite oxidation and contact with surface waters over periods of several million years, the ore and waste rock have maintained their high pH values. Although arsenic is present in the ore and waste rock, most naturally occurring forms of arsenic have very limited solubility above a pH of 5.0.

Table 2-3: Acid Forming Potential of the Waste Rock

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE ELEV.	OXIDATION STATE	pH	TOTAL SULFUR	POTENT. ACIDITY	NEUTRAL. POTENT.	NET NEUTRAL. POTENT.
Lamont	11-15-91	Lamont				0.14	4.38	89.2	84.82
Baltic	11-15-91	Baltic				0.23	7.19	67.8	60.61
YA-RSW#2	07/16/93	Yellow Aster	4,140'	Oxidized	8.39	<0.02	<0.6	45.3	>44.7
YA-QMW#4	07/16/93	Yellow Aster	4,120'	Oxidized	8.68	<0.02	<0.6	15.3	>14.7
YA-QDW#6	07/16/94	Yellow Aster	4,120'	Oxidized	8.51	<0.02	<0.6	38.6	>38.0
BK93-1A	07/27/94	Yellow Aster	3,710'	Mixed	8.29	0.035	1.09	15.3	44.21
BK93-1A	08/03/93	Yellow Aster	3,730'	Mixed	8.51	0.082	2.56	70.6	68.04
BK93-1A	08/05/93	Yellow Aster	3,565'	Unoxidized	8.55	0.16	5.0	70.6	65.6
BK93-4A	08/07/93	Yellow Aster	3,300'	Unoxidized	8.8	0.21	6.56	78.6	72.04

Table 2-4: Acid Forming Potential of the Ore

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE ELEV.	OXIDATION STATE	pH	TOTAL SULFUR	POTENT. ACIDITY	NEUTRAL. POTENT.	NET NEUTRAL. POTENT.
Ore B	11-20-91	Baltic				0.05	1.56	44	42.44
Ore A	11-20-91	Baltic				0.03	0.94	54	53.06
Ore B	11-20-91	Lamont				0.14	4.38	74.5	70.12
Ore B	11-20-91	Baltic				0.04	1.25	73.2	71.95
YA-RSO#1	7-16-93	Yellow Aster	4,140'	Oxidized	8.13	<.02	<0.6	13.1	>12.5
YA-QMO#3	7-16-93	Yellow Aster	4,120'	Oxidized	8.37	0.14	4.38	30.8	26.42
YA-QDO#5	7-16-93	Yellow Aster	4,120'	Oxidized	8.42	0.02	<0.6	37.2	>36.6
BK93-1	7-27-93	Yellow Aster	3,650'	Mixed	8.41	0.02	<0.6	85.0	>84.4
BK93-2	8-3-93	Yellow Aster	3,705'	Mixed	8.39	0.14	4.38	78.6	74.22
BK93-3	8-5-93	Yellow Aster	3,540'	Unoxidized	8.54	0.29	9.06	69.4	60.34
BK93-4	8-7-93	Yellow Aster	3,350'	Unoxidized	8.45	0.34	10.63	57.8	47.17

The acid-base potential analyses on the Yellow Aster wastes have values that are comparable to those obtained for the Baltic Mine Project. All samples analyzed indicated excess basicity. In addition, analysis of all the Yellow Aster

samples indicated pH values in excess of 8.0, indicative of basic materials. Therefore, the use of the STLC-deionized water extraction method is still an appropriate analysis method and presents the most realistic projection of the environmental fate for these waste materials.

2.2.3.2. Chemical Characteristics of Waste Rock

The chemical analyses for the waste rock material are presented in Table 2-5. The TTLC and STLC-deionized water extraction of the waste rock were conducted by pulverizing the samples to the standard STLC 2 millimeter (mm) particle size. STLC values were not exceeded for any constituents tested. The concentrations for arsenic ranged from <0.014 (the detection limit) to 0.116 ppm, well below the STLC threshold of 5.0 ppm.

2.2.3.3. Chemical Characteristics of Ore-Grade Material

The chemical analyses for the ore-grade material are presented in Table 2-6. This includes analysis of oxidized, unoxidized and mixed oxidation state materials. All samples of ore-grade materials, with the exception of sample Ore D, are of fresh material which has not been subjected to leaching by the dilute-cyanide solution to remove the precious metals. Sample Ore D is of leached ore-grade material. The TTLC and STLC-deionized water extraction of the ore-grade material were conducted utilizing the standard STLC 2 mm particle size sample preparation. STLC values were not exceeded for any constituents tested. The concentrations for arsenic ranged from <0.014 (the detection limit) to 1.94 ppm, well below the STLC of 5.0 ppm. There is no significant difference between the STLC values obtained for the leached ore-grade material and the fresh ore-grade material.

Table 2-5: Chemical Characteristics of the Waste Rock Material

RAND PROJECT WASTE ROCK SAMPLES[1]																	
Sample	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Sb	Se	Th	V	Zn
TTLC ANALYSES																	
YA-RSW#2	<0.4	144	48.4	<0.2	<0.2	0.4	45.5	34.2	<0.06	5.0	25.0	<5.0	3.3	<0.12	0.26	21.6	43.3
YA-QMW#4	0.5	20.4	18.4	<0.2	0.32	0.4	35.6	19.7	<0.06	3.4	13.9	<5.0	<3.0	<0.12	0.42	35.8	50.6
BK93-3A	0.56	144	36.2	<0.2	<0.2	0.4	36.2	19.2	<0.06	3.8	24.6	7.1	<3.0	<0.12	0.22	24.4	52.4
BK93-4A	0.4	66.3	65.6	0.4	0.4	24.2	54.9	54.9	<0.06	5.7	63.7	18.4	3.1	0.13	0.30	56.1	94.6
YA-QDW#6	0.4	204	92.2	<0.2	<0.2	0.4	50.4	80.0	<0.06	3.8	26.9	<5.0	<3.0	<0.12	0.46	42.5	79.9
BK93-1A	0.5	92.9	54.9	<0.2	<0.2	7.8	42.7	19.7	<0.06	3.4	24.6	18.4	4.2	<0.12	0.30	31.8	55.2
BK93-2A	0.5	21.6	50.4	0.2	0.5	0.4	36.2	25.1	<0.06	3.8	24.6	124	<3.0	<0.12	0.30	27.3	81.8
Baltic	0.4	1470	54.9	0.4	0.2	0.4	36.4	36.4	0.06	1.1	34.3	18.4	11.3	0.21	0.18	34.2	59.3
Lamont	0.4	455	57.6	0.4	<0.2	13.8	64.1	45	0.11	2.9	43.7	18.4	18.4	<0.16	0.42	39.4	64.9
STLC (Cal WET) USING DEIONIZED WATER																	
YA-RSW#2	<0.002	0.087	0.080	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.017	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	<0.004
YA-QMW#4	<0.002	<0.014	0.087	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.005	<0.01	<0.025	<0.015	<0.0006	<0.016	0.0032	0.0047
BK93-3A	<0.002	<0.014	0.080	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.026	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0046
BK93-4A	<0.002	0.035	0.102	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.026	<0.01	<0.025	0.021	<0.0006	<0.016	<0.002	0.0066
YA-QDW#6	<0.002	0.065	0.065	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.017	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0047
BK93-1A	<0.002	0.053	0.080	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.016	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0047
BK93-2A	<0.002	0.046	0.094	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.017	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0047
Baltic	<0.002	0.116	0.062	<0.001	<0.001	<0.002	<0.003	<0.002	<0.0002	0.007	<0.008	<0.025	0.033	0.0008	<0.01	<0.002	0.005
Lamont	<0.001	0.057	0.072	<0.001	<0.001	<0.002	<0.003	<0.002	<0.0002	0.002	<0.008	<0.018	0.064	0.0009	<0.01	0.001	0.007

1 - All samples were pulverized to 2 mm particle size and all units are in parts per million equivalent

Table 2-6: Chemical Characteristics of the Ore-Grade Material

RAND PROJECT ORE SAMPLES[1]																	
Sample	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Sb	Se	Th	V	Zn
TTLC ANALYSES																	
YA-RSO#1	0.46	1120	44.3	0.3	<0.20	8.3	16.0	26.6	<0.06	5.5	25.9	19.8	4.9	<0.12	0.20	1.3	89.6
YA-QMO#3	0.9	3470	17.6	0.23	<0.20	5.7	13.3	46.9	<0.06	1.8	16.0	8.3	7.4	0.13	0.18	1.3	75.4
BK93-4	0.9	48.9	132	<0.2	0.60	8.3	49.1	36.4	<0.06	6.4	25.9	<5.0	<3.0	0.16	0.34	26.2	94.5
YA-QDO#5	0.5	1240	28.3	0.2	<0.20	0.5	16.0	44.8	<0.06	3.7	24.2	21.7	7.4	<0.12	0.22	2.8	69.1
BK93-1	0.9	644	37.0	0.2	<0.20	8.2	16.0	25.9	<0.06	3.7	25.9	18.1	<3.0	0.21	0.22	2.8	76.5
BK93-2	0.9	274	49.1	<0.2	<0.20	5.7	19.8	19.8	<0.06	3.2	16.0	68.3	5.8	0.21	0.20	2.8	61.5
BK93-3	0.9	1120	16.0	<0.2	<0.20	7.2	36.4	21.7	<0.06	3.7	25.9	<5.0	3.0	0.13	0.20	18.0	48.5
Ore A	0.2	2330	42.8	0.3	0.2	8.3	17.2	25.9	0.06	1.8	25.9	3.6	65.8	0.16	0.18	2.8	43.4
Ore B	0.5	945	100	0.6	<0.2	0.5	80.8	55	0.06	1.8	44.8	15	12.8	<0.16	<0.18	54	69.1
Ore C	0.5	945	16.0	0.3	0.3	16.0	55	36.2	0.06	2.2	46.7	0.5	14	0.16	0.20	37.5	55
Ore D	0.5	973	59.7	0.6	<0.2	11.5	55.8	33.4	<0.06	<0.4	44.3	0.5	42.7	<0.16	0.36	40.2	60.4
STLC (Cal WET) USING DEIONIZED WATER																	
YA-RSO#1	<0.002	0.153	0.052	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.026	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0091
YA-QMO#3	<0.002	0.388	0.082	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.026	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0059
BK93-4	<0.002	<0.014	<0.082	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.061	<0.01	<0.025	<0.015	0.0008	<0.016	<0.002	0.0046
YA-QDO#5	<0.002	0.145	0.086	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.03	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0042
BK93-1	<0.002	0.044	0.004	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.031	<0.01	<0.025	<0.015	0.0011	<0.016	<0.002	<0.004
BK93-2	<0.002	0.019	0.086	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.033	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	0.0056
BK93-3	<0.002	0.059	0.078	<0.001	<0.001	<0.005	<0.003	<0.003	<0.0002	0.029	<0.01	<0.025	<0.015	<0.0006	<0.016	<0.002	<0.004
Ore A	<0.002	1.94	0.048	0.001	0.004	0.002	0.003	<0.002	0.0002	0.004	0.008	0.018	0.179	0.0011	0.01	0.001	0.003
Ore B	0.005	1.08	0.139	<0.001	<0.001	0.005	0.008	0.008	<0.0002	<0.002	0.036	<0.018	0.032	<0.0006	<0.01	0.014	0.014
Ore C	<0.002	0.861	<0.002	0.001	0.001	0.004	0.003	<0.002	0.0002	0.004	0.008	0.018	0.053	0.0008	0.01	0.003	0.002
Ore D	0.003	1.94	0.086	<0.001	<0.001	0.006	<0.003	0.039	<0.0002	<0.002	0.026	0.024	0.044	0.0009	<0.01	0.01	0.019

1 - All samples were pulverized to 2 mm particle size and all units are in parts per million equivalent

2.2.4. Ore Processing

The existing ore processing facilities consist of the Yellow Aster heap leach pad and plant, the two (2) Lamont heap leach pads and plants, the Baltic heap leach pad and plant and the Descarga heap leach pad and plant, as well as the Yellow Aster dorGprocessing facility (DPF) (Figure 2-1). The two (2) Lamont heap leach pads have reached their design capacity, have been decommissioned and are in a closure phase. The Descarga pad is currently used for testing.

The Yellow Aster heap leach facility includes a pregnant solution (solution containing precious metals) pond, a barren solution (solution without precious metals) pond and an approximate 15 million-ton heap leach pad. Run-of-mine ore from the Yellow Aster open pit is placed on the Yellow Aster heap leach pad, located southeast of the open pit. The run-of-mine ore is stacked in 25-foot lifts to a final height that ranges up to 350 feet above local grade.

Ore mined from the Lamont pit from 1986 through 1990 was placed on one (1) of two (2) Lamont heap leach pads located immediately west of the Lamont open pit. As a part of the decommissioning of the heaps, rinsing of the ore on these two (2) pads has been completed and a release request filed with the California Regional Water Quality Control Board, Lahontan Region (CRWQCB-LR). The CRWQCB-LR has made the determination that the spent ore is neutralized and can be managed as a Class C mining waste.

The Baltic heap leach facility, which is located to the north of the Baltic open pit, includes a leach pad and a combined pregnant solution and barren solution pond. The leach pad will eventually hold approximately 15 million tons of ore. The run-of-mine ore is stacked in 25-foot lifts to a final height of approximately 200 feet above local grade.

The Descarga operations, located north of the Yellow Aster open pit in the NW¼ of Section 35, Township 29 South, Range 40 East, MDB&M, is a heap leach operation designed to test leach ore from the Randsburg area and reprocess the mine waste from historic Yellow Aster mining operations. The Descarga

heap leach pad is permitted for a 1.5 million-ton heap leach pad. The leach pad currently contains approximately 331,000 tons of material. The heap leach facility includes a pregnant solution pond and barren solution pond. The run-of-mine and screened ore is stacked in 25-foot lifts and will reach a final height of 50 feet above local grade.

The general stacking procedure for the construction of each of the heaps consists of having the loaded trucks dump the ore on the pad. A small front-end loader spreads a measured amount of calcium oxide over the pile of dumped ore. The calcium oxide is applied to the heap for leach solution pH control. A bulldozer-type tractor then pushes the ore to the active portion of the pad, maintaining an approximate 25-foot high lift. Solution distribution lines are then placed on the ore. This process is repeated until the entire pad is covered and then subsequent benches are constructed.

Application of the cyanide solution is accomplished using a drip irrigation system, occasionally supplemented with sprinklers on the side slopes and occasionally on top of the heap. Sprinklers are used on the slopes of the heap for worker safety reasons, and because they are more effective at covering the slopes with solution. In addition, the sprinklers allow for flexibility in the rate at which solution is applied to the heap, which is necessary during periods of solution volume fluctuation. Solution is applied at a rate of between 0.003 and 0.005 gallons per minute (gpm) per square-foot of surface area. Leaching is concurrent with loading.

The barren solution percolates through the heaped ore to the leachate collection system and flows by gravity to lined collection ditches with perforated pipe and drain rock cover, acting as a french drain. The ditches direct the flows to the pregnant solution pond. The pregnant solution is then pumped to the process plant and through a series of carbon columns, where the precious metals are adsorbed onto carbon. All components of each process plant, including the concrete slab and portions of some of chemical storage areas, are constructed on a synthetic liner within containment berms. These liners are extensions of the pregnant solution pond liners, so that any spilled materials drain into the solution

ponds. The ponds are also covered with bird exclusion netting, attached to cables and tie-downs off the edge of the liner. The solution ditches are not covered.

Upon exiting the carbon columns, the leach solution, now barren of precious metals, flows to the barren pond, where fresh water is added to maintain the water balance. Barren leach solution is then recycled back onto the top of the heap to continue the process cycle. Sodium cyanide is added to the barren leach solution to reestablish the desired reagent level of up to 250 parts per million (ppm) cyanide.

The carbon in the carbon columns, when loaded to capacity with precious metals, is transferred to the stripping section. Hot alkaline (pH 13) solution is used to strip the precious metals from the loaded carbon. The solution, now containing the precious metals, is then pumped through an electrowinnowing circuit where the metals are electroplated. The stripped carbon is cleaned with a dilute hydrochloric or nitric acid solution before being brought back on-line.

The resultant gold-bearing material from each processing plant is then transported to the DPF at the Yellow Aster plant for further processing. The gold-bearing "steel wool" is melted to separate out the non-precious metal, leaving a precious metal dorGbar. The Yellow Aster DPF is equipped with a baghouse as part of the particulate emission control system.

2.2.5. Ancillary Facilities

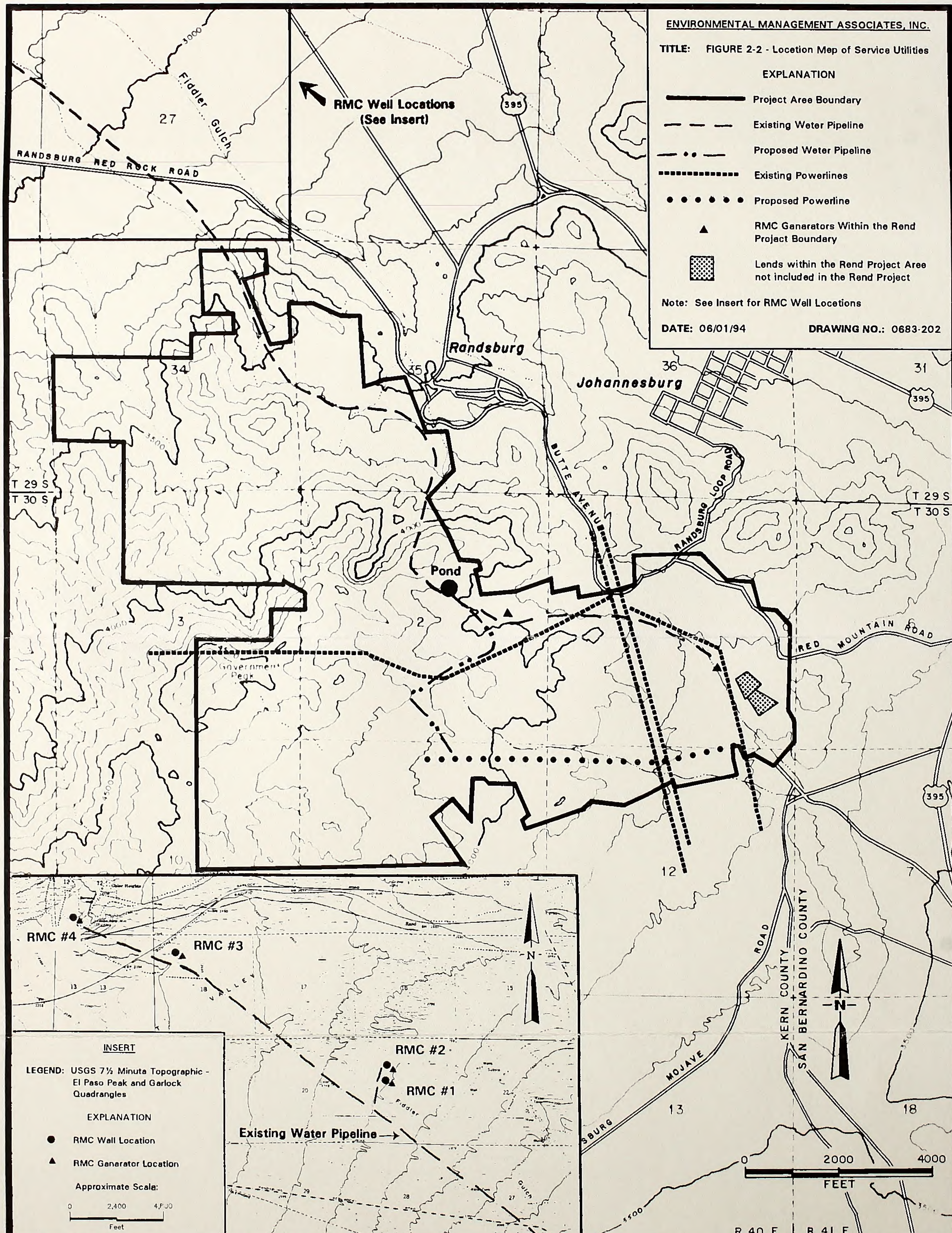
The existing Yellow Aster, Lamont, Baltic and Descarga ancillary facilities include: offices; a maintenance shop; water supply facilities; power supply facilities; explosives magazines; chemical storage areas; diesel storage areas; laboratory; roads and right-of-ways; and, surface flow and erosion control structures.

2.2.5.1. Manpower

Approximately 140 employees currently operate the existing mining facilities. Of these, approximately 30 employees are salaried administrative, supervisory, and technical staff. The remaining employees operate the mining and processing facilities on rotating shifts. Mining and processing operations are conducted 24 hours per day, seven (7) days per week, 365 days a year. Most of the salaried staff work one (1) shift per day, five (5) days per week. Thirty-two (32) employees (approximately 25 percent) live locally, in the towns of Randsburg, Johannesburg and Red Mountain. Eighty-seven (87) employees (approximately 60 percent) reside in Ridgecrest and commute to the mine site each day. The other 21 employees (approximately 15 percent) reside in other communities in the regional area and commute to the mine site each day. Because carpooling is prevalent in this area, there are approximately 40 trips per day between Ridgecrest and the other communities in the region and the project site. The traffic is spread over a 24-hour period.

2.2.5.2. Water Supply

RMC uses four (4) water wells to produce water sufficient to operate existing mining activities (Figure 1-1 and Figure 2-2), which includes the operation of the heap leach facilities and dust control. RMC is planning on the drilling and completion of an additional groundwater production well in the vicinity of well RMC #4 on private land. This well (RMC #5) will be completed similar to well RMC #4 and be used primarily as a backup to well RMC #4. RMC currently consumes up to approximately 677 acre-feet per year (afpy), or approximately an average of 605,000 gpd, to compensate for evaporative loss and capillary retention of water in the heaps (approximately 77 percent), and water used for dust suppression, construction and reclamation at their Yellow Aster, Lamont, Baltic and Descarga facilities (approximately 23 percent). RMC's standard procedure to produce the required water is to pump an average of 460 gpm from well RMC #4, with the actual pumping rate varying from 0 to 580 gpm during any given day of the year. This is periodically supplemented by pumping wells RMC #1 and RMC #2 at



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-2 - Location Map of Service Utilities
EXPLANATION
Project Area Boundary
Existing Water Pipeline
Proposed Water Pipeline
Existing Powerlines
Proposed Powerline
RMC Generators Within the Rend Project Boundary
Lands within the Rend Project Area not included in the Rend Project
Note: See Insert for RMC Well Locations
DATE: 06/01/94
DRAWING NO.: 0683-202
RMC Well Locations (See Insert)
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Pond
Government Peak
MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
0 2000 4000
FEET
N
RMC #4
RMC #3
RMC #2
RMC #1
Existing Water Pipeline
INSERT
LEGEND: USGS 7½ Minute Topographic - El Paso Peak and Garlock Quadrangles
EXPLANATION
RMC Well Location
RMC Generator Location
Approximate Scale:
0 2,400 4,800
Feet

approximately ten (10) gpm each and well RMC #3 at 100 gpm. All water used in the processing of the ores which does not evaporate is reused for processing. Potable water is supplied by the potable water line from the Rand Communities Water District (RCWD). The cross connection between the process and potable water systems are fitted with one-way flow valves to eliminate the possibility of process water entering the potable water system.

2.2.5.3. Power Supply and Utilities

Power for the current operations is primarily supplied by Southern California Edison (SCE) through their power grid. However, each of RMC's existing water production wells require diesel-powered equipment for normal operations. The generators at wells RMC #1 and RMC #2 are each operated approximately one (1) hour per week year-round. The generator at well RMC #3 operates approximately eight (8) hours per week year-round, and the pumps at well RMC #4 are driven an average of 20 hours per day, year-round.

Emergency power requirements for the project are provided by two (2) 350 kW diesel-powered electric generators located in the Baltic and Yellow Aster process facilities (Figure 2-2). During periods of service interruption from SCE, essential loads and services are powered by these generators. Telephone service is provided to the offices and maintenance shop; field communications are by an FM mine communication system.

2.2.5.4. Chemical Storage

A list of the chemicals currently used at RMC's operations area, the annual consumption, quantities stored on-site and the type of secondary containment is provided in Table 2-7. All hazardous materials used for the existing RMC operations are stored in areas with secondary containment and limited access, consistent with applicable federal, state and local requirements. Containers are inspected for leakage on a daily or weekly basis depending on the type of chemical and location. A Spill Prevention Control and

Table 2-7: Chemicals Used for Existing Operations, Annual Consumption, Location and Amount of On-Site Storage and Secondary Containment

CHEMICALS USED FOR EXISTING OPERATIONS				
CHEMICAL NAME	ANNUAL CONSUMPTION	AMOUNT STORED ON-SITE	LOCATIONS STORED	SECONDARY CONTAINMENT
Sodium Cyanide	1,700,000 lbs	168,000 lbs	• West of Yellow Aster Barren Pond • West of Baltic Barren Pond	• None • Liner
Sodium Hydroxide	120,000 lbs	25,000 lbs	• West of Yellow Aster Barren Pond • West of Baltic Pregnant Pond • Lamont Storage Area	• Concrete pad • Liner • None
Hydrochloric Acid	95,000 lbs	12,000 lbs	• South of Yellow Aster Mill Building • Lamont Storage Area	• Bermed concrete pad over HDPE liner • None
Polymaleic Acid	219,000 lbs	70,000 lbs	• SW of Yellow Aster Pregnant Pond • West of Yellow Aster Barren Pond • SE of Baltic Ponds	• Concrete pad • None • Liner
Nitric Acid	119,720 lbs	19,000 lbs	• Baltic Process Facility • Lamont Storage Area	• Bermed concrete pad over HDPE liner • None
Diesel Fuel	1,470,000 gal	20,000 gal	• East of Yellow Aster Barren Pond • Lamont Process Area • South of Baltic Process Area	• Bermed HDPE liner • None • Bermed HDPE liner
Unleaded Gasoline	40,000 gal	250 gal	• East of Yellow Aster Barren Pond	• Bermed HDPE liner
Ammonium Nitrate	5,400,000 lbs	184,000 lbs	• NW of Yellow Aster Leach Pad	• None
Acetylene	12,000 ft^3	2,000 ft^3	• Miscellaneous locations throughout project area	• None
Oxygen	12,000 ft^3	5,000 ft^3	• Miscellaneous locations throughout project area	• None
Automatic Transmission Fluid	800 gal	110 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
Ethylene Glycol	1,000 gal	110 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad

CHEMICALS USED FOR EXISTING OPERATIONS				
CHEMICAL NAME	ANNUAL CONSUMPTION	AMOUNT STORED ON-SITE	LOCATIONS STORED	SECONDARY CONTAINMENT
Solvents	550 gal	110 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
Rock Oil	550 gal	55 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
Gear Oil	550 gal	55 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
Greases	400 gal	50 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
Calcium Oxide	23,000,000 lbs	300,000 lbs	• Each heap leach pad.	• Lined and bermed
Activated Carbon	152,000 lbs	80,000 lbs	• Lamont storage area • Baltic Process Facility • Yellow Aster Process Facility	• None • HDPE liner • None
Propane	4,000 gal	220 gal	• Miscellaneous locations throughout project area	• None
Calcium Hypochlorite	4,000 lbs	8,000 lbs	• Lamont Storage Area	• None
Motor Oil	10,000 gal	500 gal	• Maintenance area south of Yellow Aster Process Facility	• Concrete pad
C-354	1,300 gal	275 gal	• Yellow Aster plant • East of Baltic Ponds	• Concrete pad and HDPE liner • None
Silicon Dioxide	2,400 lbs	200 lbs	• Yellow Aster laboratory	• Concrete slab
Sodium Nitrate	1,200 lbs	200 lbs	• Yellow Aster process plant	• Concrete and HDPE liner
Borax (5 mol)	1,200 lbs	200 lbs	• Yellow Aster plant	• Concrete and HDPE liner
Tovan Blasting Emulsion	125 tons	10 tons	• Northwest Yellow Aster heap leach	• None
Cast Boosters	42,000	1,000	• Northwest Yellow Aster heap leach	• None
Detonation Cord	36,000 rolls	1,500 rolls	• Northwest Yellow Aster heap leach	• None

Countermeasure Plan was prepared for the existing RMC operations in December 1994, and a Hazardous Materials Business Plan and Inventory Update (dated April 1994) for the same operations was prepared pursuant to Chapter 6.95 of the California Health and Safety Code and submitted to the Kern County Fire Department.

Sodium cyanide is shipped, received and stored in manufacturer's-approved 3,000-pound net capacity flow bins. Sodium cyanide is added to the barren solution at the barren solution ponds in order to maintain the desired 200 to 250 ppm cyanide concentration in the barren solution. The primary method used in this process is to allow a controlled amount of solid sodium cyanide briquets to flow directly from the flow bin into a nominal 50-pound capacity baffled mixing chamber. Into this chamber a metered flow of barren solution (minimum 10.0 pH) is directed, resulting in the dissolution of the sodium cyanide. The resulting sodium cyanide solution, at about 30 percent strength, flows from the chamber through a piping system into the barren solution pond.

When liquid cyanide is received, it is off-loaded from the manufacturer's specially-designed trucks into one (1) of two (2) 10,000 to 15,000 gallon storage tanks at a concentration of about 30 percent cyanide and a pH of about 13.0. This solution is then metered directly into the barren solution pond.

When bulk truck solid sodium cyanide is received, it is put into solution directly from the truck and stored at a concentration of about 30 percent cyanide and a pH of about 13.0 in one (1) of two (2) adequately sized storage tanks. This solution is then metered directly into the barren solution pond.

The sodium hydroxide, hydrochloric acid, polymaleic acid and carbon are stored at the processing facilities (Table 2-7). The blasting agents and associated explosives, which are necessary for mining operations, are stored at existing permitted magazines. The calcium oxide is stored adjacent to the Yellow Aster heap. All chemicals are stored in conformance with local, state

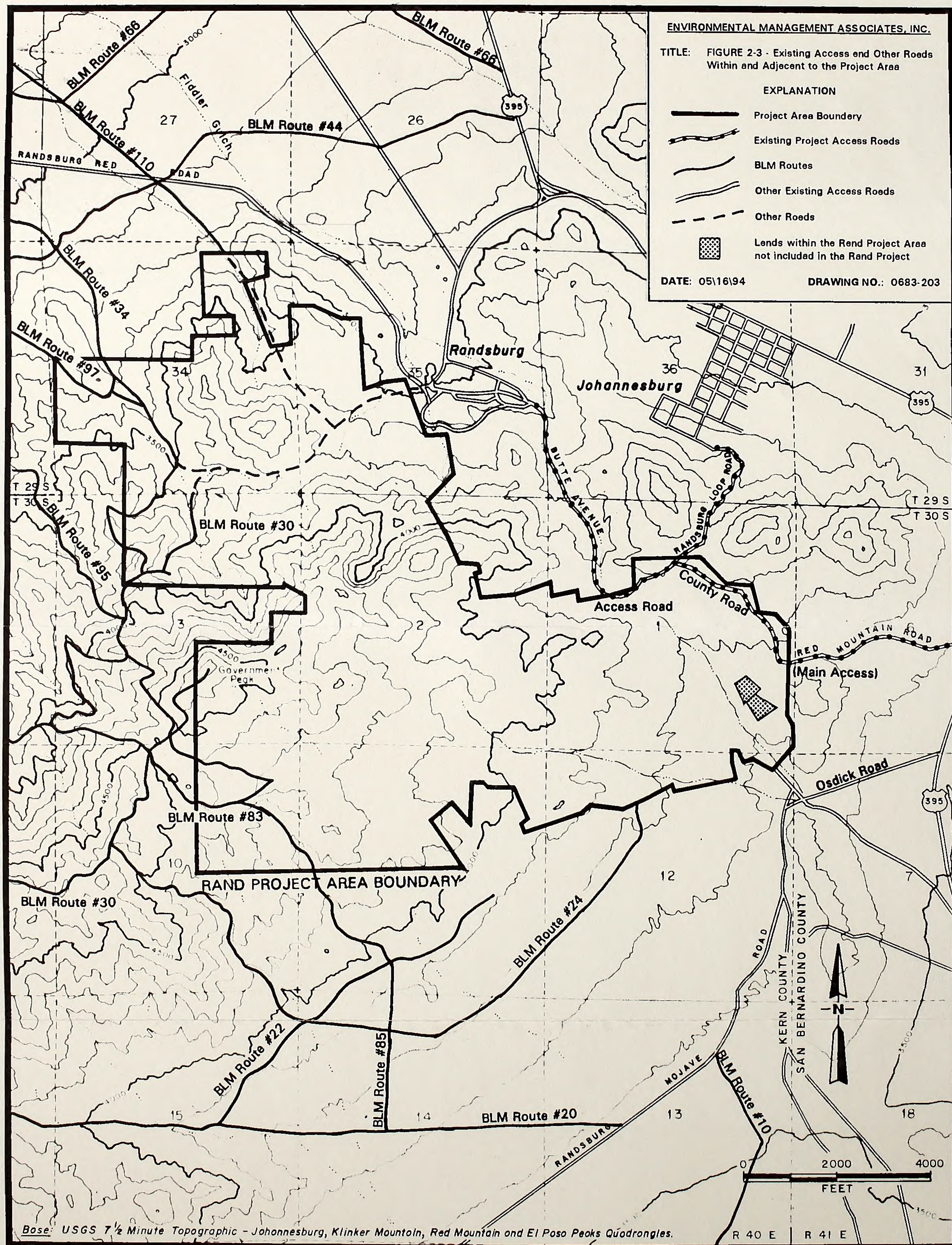
and federal regulations and company safety policies. The calcium oxide is stored adjacent to the Yellow Aster heap and Baltic heap.

2.2.5.5. Waste Disposal

RMC has four (4) septic treatment systems, each with a leach drain field permitted through Kern County, within the Rand Project area. RMC contracts with local disposal service companies for the pumping of the septic tanks and the removal of other (non-mining) waste from the project site, such as the removal of solid office waste, for disposal in an approved landfill. Regulated wastes, such as used oils and oil filters, are stored on the concrete apron adjacent to the maintenance building and are currently transported off-site by Petroleum Recycling Company to its Fontana, California facility. The waste oil is treated and then transported to Petroleum Recycling Company's Signal Hills facility for sale as bunker fuel in the Los Angeles harbor area. The oil filters are processed and recycled. Other regulated wastes are stored in a bermed area between the maintenance building and the Yellow Aster process ponds. Regulated wastes, such as laboratory wastes and spent solvents, are currently transported off-site by Asbury Environmental Services to the DeMenno-Kerdoon facility in Compton, California. The waste oil is treated for sale as bunker fuel in the Los Angeles harbor area. or disposed of according to all applicable local, state and federal laws and regulations and in a manner approved by the responsible regulatory agencies.

2.2.5.6. Roads

The preferred access to the existing operations is via the Red Mountain Road, a paved county road, from Red Mountain (Figure 2-3). Access to existing operations is also possible from Randsburg, to the north, and Johannesburg, to the north, via Butte Avenue and the Randsburg Loop Road, respectively. Both these roads connect with the relocated county road, which was constructed to provide a public road around the existing Baltic Mine Project. The relocated county road connects the Red Mountain Road with Butte Avenue near the access road for the existing operations. Specific



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-3 - Existing Access and Other Roads Within and Adjacent to the Project Area
EXPLANATION
Project Area Boundary
Existing Project Access Roads
BLM Routes
Other Existing Access Roads
Other Roads
Lands within the Rand Project Area not included in the Rand Project
DATE: 05\16\94
DRAWING NO.: 0683-203
BLM Route #66
BLM Route #110
BLM Route #44
BLM Route #34
BLM Route #97
BLM Route #30
BLM Route #95
BLM Route #83
BLM Route #24
BLM Route #22
BLM Route #85
BLM Route #20
BLM Route #10
Fiddler Gulch
RANDSBURG RED ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
County Road
Access Road
RED MOUNTAIN ROAD
(Main Access)
Osdick Road
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
395
N
0 2000 4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

components of the existing operations are accessed from the Red Mountain Road via unpaved roads. Temporary and permanent access and haul roads exist throughout the area of existing operations.

As part of RMC's operations, water sprays and/or chemical treatments are used to minimize the generation of dust from disturbed surfaces. Water, and/or an environmentally acceptable chemical dust inhibitor, is applied to the haulage roads, ore loading, and dozing operations in sufficient quantities to prevent significant emissions. Water is generally used in areas of active disturbance, while the chemical dust inhibitor, usually sodium lignosulfonate, is used in areas that are constructed for operations that continue for the life of the project, such as the permanent haul road. Sodium lignosulfonate is a non-toxic, non-hazardous co-product of cellulose production from trees.

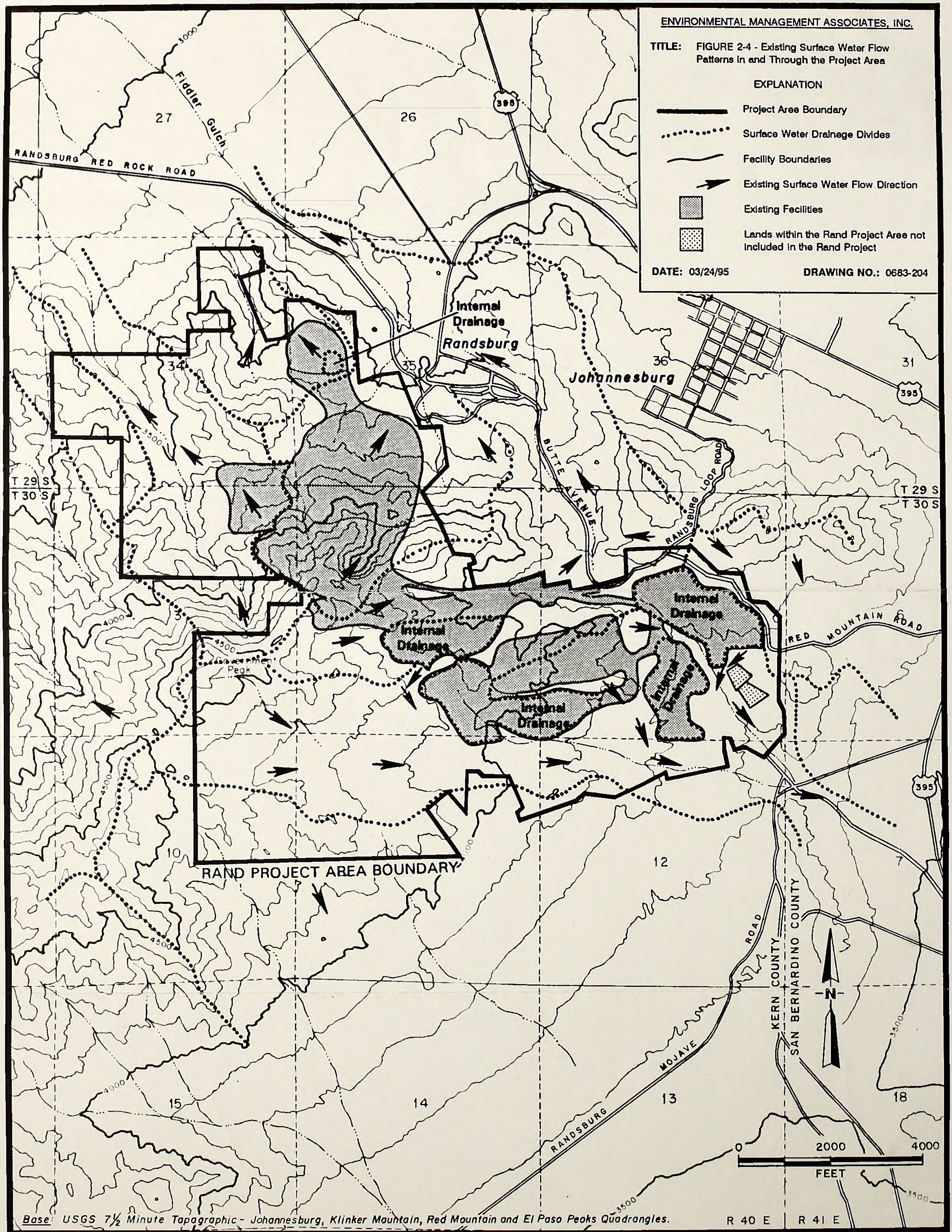
2.2.5.7. Ditches and Surface Flows

Existing surface flow patterns in and through the project area are shown on Figure 2-4. As part of the existing operations, some surface drainages have been diverted around project components, including the heap leach facilities, open pits, waste rock stockpiles and other facilities. In general, surface flows from isolated precipitation events that are diverted around the project facilities are routed back into their natural drainages. Precipitation into the pits collects at the bottom of the pits and is allowed to evaporate. Due to historic mining operations the existing Yellow Aster open pit is not currently internally drained and precipitation into the open pit flows to the north out of the open pit into natural drainages.

2.3. Proposed Action

2.3.1. Introduction

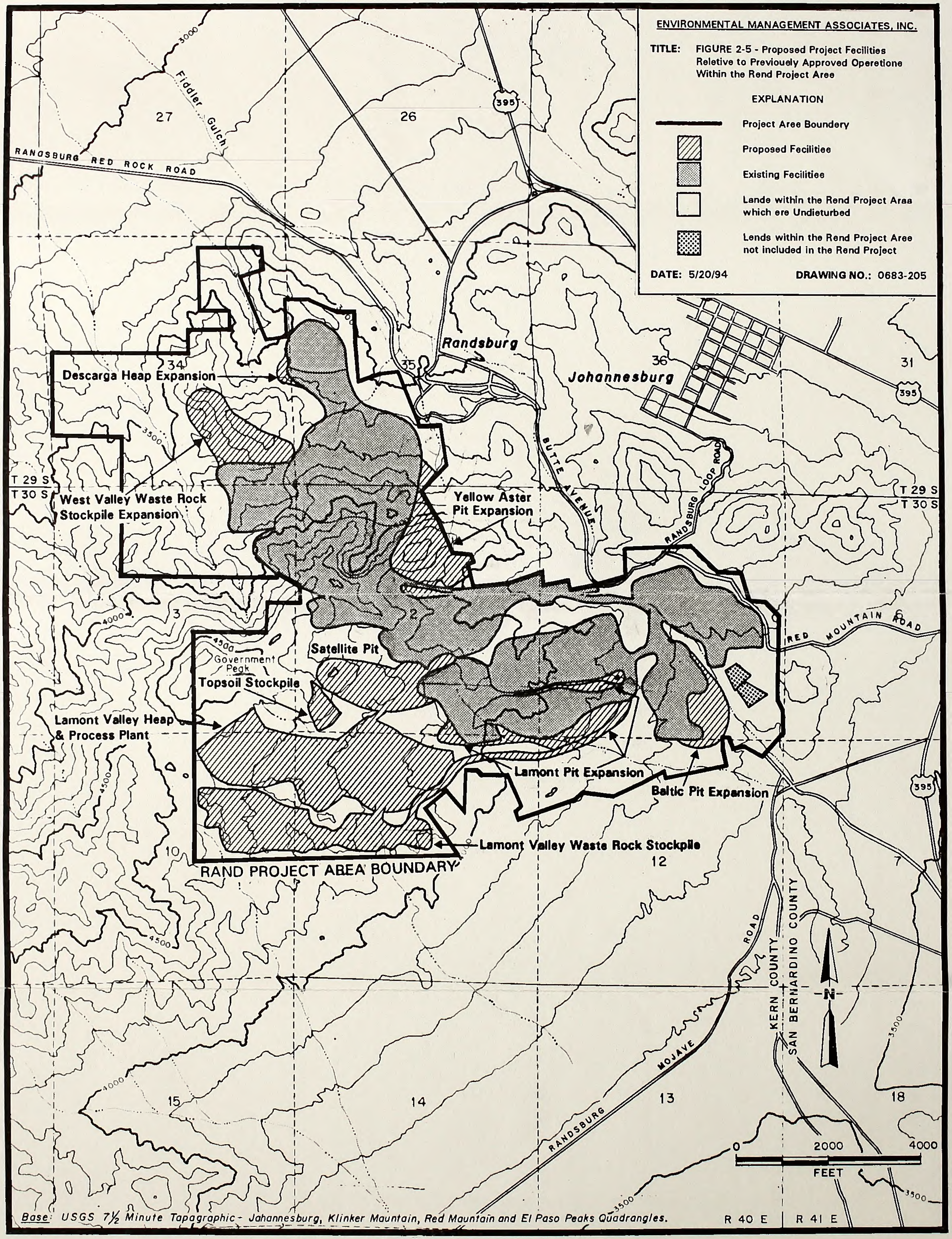
The Rand Project is a proposal to extend existing operations at the three (3) adjacent, approved, open-pit, heap-leach mine projects by: mining additional gold and silver ore and waste rock at the current average operating rate of


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-4 - Existing Surface Water Flow Patterns in and Through the Project Area
EXPLANATION
Project Area Boundary
Surface Water Drainage Divides
Facility Boundaries
Existing Surface Water Flow Direction
Existing Facilities
Lands within the Rand Project Area not included in the Rand Project
DATE: 03/24/95
DRAWING NO.: 0683-204
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Internal Drainage
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

approximately 45,000 tons per day; continuing the existing water use for an additional nine (9) to ten (10) years; constructing facilities to process the additional ore and stockpile the additional waste rock; continuing associated exploration activities; and continuing implementation of wildlife impact reduction measures and reclamation activities. The proposed project has been designed to meet the anticipated permit requirements of the various federal, state and local agencies.

The proposed Rand Project would consist of the following components: continued development and expansion of the three (3) approved open pits (Yellow Aster, Baltic, and Lamont); new development of an associated satellite deposit; development and/or expansion of two (2) waste rock stockpiles; development of two (2) heap leach facilities; development of two (2) mineral recovery plants; other ancillary facilities; and the increased consumption of water from an average of approximately 677 afpy to approximately 800 afpy in 1999 and then decreasing to approximately 437 afpy in 2006. Mining activities under the Proposed Action would commence in 1995, and would terminate in approximately 2006, extending the existing mine life by nine (9) to ten (10) years; reclamation would then continue until the year 2012. Sixty (60) million tons of ore would be leached under the Proposed Action. This would occur at the 185-acre Lamont Valley site and possibly at the 31-acre Descarga area site. Seventy-two (72) million tons of waste rock would be deposited at the 64-acre expansion of the West Valley waste rock stockpile and the new 94-acre Lamont Valley waste rock stockpile. Portions of the proposed Rand Project would occupy land that has been previously disturbed by both RMC's ongoing operations and surface and underground mining and prospecting operations which began in the 1890's. The Rand Project boundary and locations of the proposed facilities are shown in Figure 2-5.

The proposed project would encompass a maximum of approximately 511 acres of new surface disturbance associated with the expansion activities. An itemized list of the proposed new surface disturbance associated with the Rand Project, as well as the existing surface disturbance and the undisturbed acreage, is



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-5 - Proposed Project Facilities Relative to Previously Approved Operations Within the Rand Project Area
EXPLANATION
Project Area Boundary
Proposed Facilities
Existing Facilities
Lands within the Rand Project Area which are Undisturbed
Lands within the Rand Project Area not included in the Rand Project
DATE: 5/20/94
DRAWING NO.: 0683-205
RANDSBURG RED ROCK ROAD
Fiddler Gulch
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Descarga Heap Expansion
West Valley Waste Rock Stockpile Expansion
Yellow Aster Pit Expansion
Satellite Pit
Government Peak
Topsoil Stockpile
Lamont Valley Heap & Process Plant
Lamont Pit Expansion
Baltic Pit Expansion
Lamont Valley Waste Rock Stockpile
RAND PROJECT AREA BOUNDARY
T 29 S
T 30 S
KERN COUNTY
SAN BERNARDINO COUNTY
RANDSBURG MOJAVE ROAD
395
N
0 2000 4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.
R 40 E
R 41 E

presented in Table 2-8. The disturbance under the proposed Rand Project disturbance relative to permitted operations is shown in Figure 2-5.

Table 2-8: Estimated Approved and Proposed Disturbance and Undisturbed Areas for the Rand Project

MINE FACILITY COMPONENT	ACRES	MINE FACILITY COMPONENT	ACRES
Yellow Aster Pit Expansion	52	Lamont Valley Leach Facility	185
Baltic Pit Expansion	18	Descarga Area Leach Facility Expansion	4
Lamont Pit Expansion	21	Haul and Exploration Roads	21
Satellite Pit	11	West Valley Waste Rock Stockpile Expansion	64
Lamont Valley Waste Rock Stockpile	64	Lamont Valley Topsoil Stockpile	11
		TOTAL PROPOSED SURFACE DISTURBANCE	511
		TOTAL E ISTING SURFACE DISTURBANCE	761
		TOTAL UNDISTURBED AREAS	1,248
		TOTAL PRO ECT AREA	2,520

2.3.2. Mining

Based on the results of ongoing exploration and development drilling, additional ore zones have been identified adjacent to and within the three (3) existing pits (Yellow Aster, Baltic and Lamont). In addition, small associated areas of satellite mineralization have been identified within the Rand Project area. Current estimates of final pit dimensions as a result of the development of these additional ore zones, including pit floor elevations and estimated groundwater elevations, are shown in Table 2-9. In each pit, the final pit floor elevation is at least 200' above the groundwater level under the pit. Drilling within the area defined as the ore body was carried out with sufficient detail to adequately define the reserves. In the waste rock stockpile and leach pad areas, drilling was conducted on approximately 400-foot centers to identify possible open pit-type reserves. Drilling results from the waste rock stockpile and heap areas indicated that scattered gold values were present, but no continuity between assays or holes were identified that would indicate a minable reserve.

Table 2-9: Approximate Proposed Final Surface Dimensions, Maximum Depth from the Surface, Pit Floor Elevations, and Watertable Elevations of the Open Pits

PITS	LENGTH	WIDTH	DEPTH	PIT FLOOR (elevation)	WATERTABLE (elevation)
Yellow Aster	4,400'	3,000'	800'	3,500'	2,860'
Baltic	2,400'	1,500'	440'	3,400'	3,200'
Lamont	4,000'	1,100'	380'	3,580'	<3,260'
Satellite	2,300'	1,000'	400'	3,700'	<3,260'

Ore and waste removal for development of these additional ore zones would be conducted in the same manner as the existing mining operations. There is no anticipated change in the mining rate from the current average of approximately 45,000 tpd, and the economic analysis for mining these ore bodies requires continuing the existing practice of simultaneously mining of the three (3) open pits. The type of equipment to be used would be the same as is currently being used for the existing operations. Blasting would still be done between three (3) and five (5) times per week during the daylight hours.

2.3.3. Waste Rock Stockpiles

Two (2) new or expanded waste rock stockpile areas are proposed: one (1) would be located west of the Lamont open pit in the Lamont Valley area, and the other would be an expansion of the West Valley waste rock stockpile located northwest of the Yellow Aster open pit (Figure 2-5). Together, these stockpiles would contain as much as 72 million tons of rock when the Rand Project is completed.

No segregation of waste material is planned for the waste rock stockpiles. Since the internal ore cutoff grade is so low (0.008 to 0.010 ounces per ton (opt) gold), and the normal analytical error is one-quarter of the cutoff value, it would not be possible to reliably determine grade differences in the waste rock. It is anticipated that waste rock sent to the waste rock stockpile would have an average grade (value) of less than 0.004 opt. The detection limit for assays

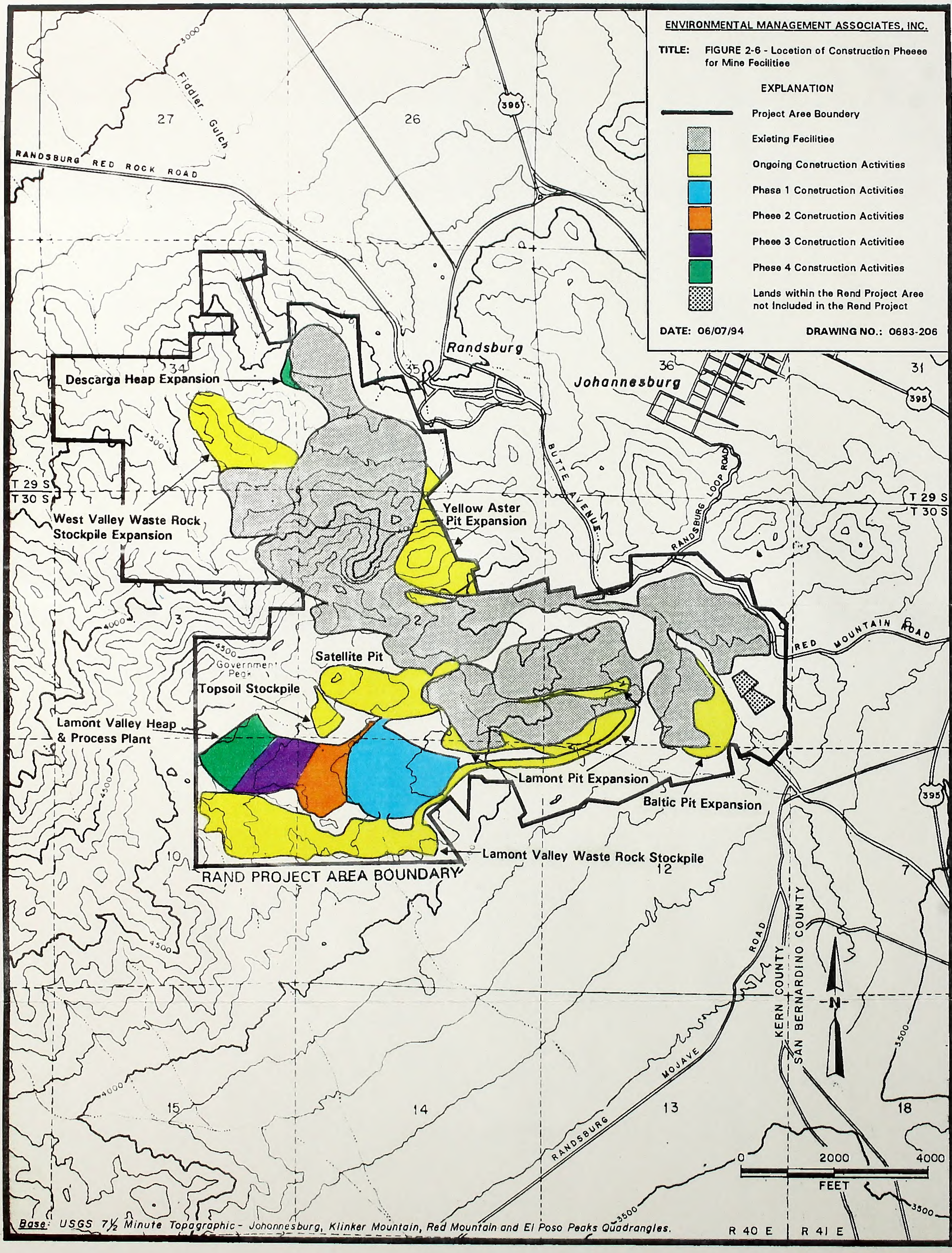
reporting purposes is 0.002 opt and the potential analytical error (precision) is plus-or-minus approximately 0.0025 opt. Factoring in the accuracy and precision of the assays, the actual grade of a given load of waste rock could be anticipated to range from 0.0015 to 0.0065 opt. This means that any given load of waste rock could have a gold content that essentially ranges from zero (0) to the internal cutoff, and it would not be possible to actually determine where in that range a particular load would fall. Therefore, no attempt would be made to segregate the materials, based on gold content, that would be sent to the waste rock stockpile.

2.3.4. Ore Processing Facilities

Development of the two (2) proposed heap leach facilities would include the construction of two (2) heap leach pads and associated pregnant and barren solution ponds. Proposed are the staged construction of a 185-acre heap leach facility with a 165-acre pad in the Lamont Valley, and a 31-acre heap leach facility in the Descarga area. A map identifying each phase of the proposed pad construction is presented in Figure 2-6. The Lamont Valley area heap leach pad would be designed to hold 60 million tons of ore, and the Descarga area heap leach pad would be designed to hold six (6) million tons of ore. The Descarga area heap leach facility would replace the existing facility at that location. All material on the existing Descarga pad would be placed on the new pad. The run-of-mine ore would be stacked in 25-foot lifts on each pad.

The heap leach facility to be located in the Lamont Valley area would be utilized as the primary processing facility for activities included in the Rand Project. Initially, a heap leach facility to replace the one currently located in the Descarga area would not be constructed. However, should logistical and/or economic factors dictate, this facility would then be constructed and operated.

The two (2) leach pad sites would be graded to form uniform, gently sloping pads with an average slope of approximately six (6) percent. A combination service road and containment dike would be constructed around the perimeter of the pads to channel process solution and rainfall runoff from the heaps to the barren and pregnant ponds. Interceptor ditches would be constructed to divert



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-6 - Location of Construction Phases for Mine Facilities
EXPLANATION
Project Area Boundary
Existing Facilities
Ongoing Construction Activities
Phase 1 Construction Activities
Phase 2 Construction Activities
Phase 3 Construction Activities
Phase 4 Construction Activities
Lands within the Rand Project Area not Included in the Rand Project
DATE: 06/07/94
DRAWING NO.: 0683-206
Descarga Heap Expansion
West Valley Waste Rock Stockpile Expansion
Yellow Aster Pit Expansion
Satellite Pit
Topsoil Stockpile
Lamont Valley Heap & Process Plant
Lamont Pit Expansion
Baltic Pit Expansion
Lamont Valley Waste Rock Stockpile
RAND PROJECT AREA BOUNDARY
Randsburg
Johannesburg
Fiddler Gulch
RANDSBURG RED ROCK ROAD
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
Government Peak
T 29 S
T 30 S
R 40 E
R 41 E
395
N
0
2000
4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

surface runoff around the facilities. The heap leach pads, as well as the collection channels and process ponds, would be constructed in stages and designed as lined facilities with leak detection systems, as explained below, in conformance with the CRWQCB-LR requirements.

Barren, Pregnant and Stormwater Ponds

The barren/pregnant solution ponds at each facility would be constructed immediately down-slope from the leach pad. Leach solution and rainfall runoff from the heap would drain by gravity directly to the ponds. The pregnant and barren solution ponds have been designed to hold the working volume of solution while maintaining a 2-foot freeboard after a 100-year/24-hour storm event with a simultaneous 24-hour power outage. The entire capacity of the ponds, including the stormwater pond at the Lamont Valley site, would be utilized only during a major precipitation event.

Leach Pad Liner System

Heap leach pad liners would be designed as an engineered alternative to the CRWQCB-LR prescriptive standard for a Group B mining waste, waste pile. The following is a description of the construction standard to be used for each heap leach pad facility.

The leach pad liner would consist of a 60-mil high-density polyethylene (HDPE) liner placed directly on a compacted, fine-grained soil foundation. A 12-inch layer of fine-grained material would be placed directly on the HDPE liner as a protective cushion layer. An 18-inch layer of drain rock would be placed on top of the fines layer to facilitate the collection and removal of leach solution and to minimize the hydraulic head on the synthetic liner.

The perimeter of the ore heap would be set back ten (10) feet from the toe of the containment dike. The resultant channel would carry the leach solution to the pregnant pond. The channel would have a french drain system consisting of perforated pipe covered by drain rock. In addition, certain areas would have an

additional 60-mil HDPE inner liner and a leachate collection and recovery system (LCRS) consisting of HDPE drain net.

Barren and Pregnant Ponds Liner System

Each barren and pregnant pond liner would be designed as an engineered alternative to the prescriptive standard for a Group B surface impoundment. The liner system would consist of an inner 80-mil HDPE liner and an outer 60-mil HDPE liner separated by an HDPE geonet LCRS. The LCRS consists of a single layer of drain net on the pond sides and a double layer of drain net on the pond bottom.

Vadose Zone Monitoring

The vadose zone monitoring system would be essentially identical to the system approved for use at the Baltic Mine Project heap leach facility. For purposes of leak detection and corrective action, the leach pads would be divided into a number of discrete cells. Division would be accomplished by the construction of diverting berms in the solution recovery layer. Once leach solution reaches the lowest point in a given cell, it would be piped directly to the solution channel at the toe of the heap. This would allow visual inspection of the solution return from each cell. A separate leak detection drain system would be constructed below the liner bedding material, coincident with each cell. This system would consist of 2-inch diameter perforated polyvinyl chloride (PVC) header pipes in a drain rock envelope fed by drain net laterals. Each lateral strip would be 5-feet wide by 100-feet long, and would consist of HDPE drain net sandwiched between an upper layer of geotextile and a lower layer of 20-mil HDPE.

Heap Leach Facility Operation

The proposed heap leach facilities would be operated in a manner similar to existing Yellow Aster and Baltic facilities. The progressive lifts would be

constructed in a similar manner, with an overall slope designed for operational stability and decommissioning and final reclamation.

Geotechnical engineering and design of the facilities have been completed. The ponds have been designed to hold the working volume of solution while maintaining a 2-foot freeboard after a 100-year/24-hour storm event. The factors used for the storm event calculations were: contained process solution; on-site precipitation, including direct precipitation into the pond; and a 24-hour power outage. The process ponds and overflow pond for the Lamont Valley facility would be sized to hold 66 acre-feet with two (2) feet of residual freeboard. The process pond for the Descarga facility would be sized to hold 16 acre-feet with two (2) feet of residual freeboard. At the Lamont Valley facility, the capacity of the pregnant solution pond would be approximately 3.88 million gallons with a 2-foot residual freeboard; the capacity of the barren solution pond would also be approximately 3.88 million gallons with a 2-foot residual freeboard. The stormwater pond would have a capacity of 9.31 million gallons with a 2-foot freeboard. At the Descarga facility, the pregnant solution pond would be approximately 2.07 million gallons, and the capacity of the barren solution pond would be approximately 2.07 million gallons. Both would, at capacity, have a 2-foot freeboard. The pond design also includes 1-inch mesh bird exclusion netting, attached to cables and to tie-downs off the edge of the liner. Flow within the solution ditches would be within french drains, which are planned to carry flows from the designed storm event without solutions being exposed.

The carbon adsorption systems at the two (2) new heap leach facilities would be designed and operated in a similar manner to the existing facilities. The resultant gold bearing material from the carbon adsorption facilities would be transported to the Yellow Aster DPF for further processing. The use of the Yellow Aster DPF for the further processing of the gold bearing material would result in approximately one (1) to three (3) trips per week by a pickup or van, which would carry the gold-bearing steel wool to the Yellow Aster DPF. The gold-bearing steel wool would be melted to remove the non-precious metal, leaving a precious metal dorGbar. The spent carbon will be sent to an off-site processor for re-processing.

2.3.5. Ancillary Facilities

Because the Rand Project is an expansion of existing operations, the construction of many of the ancillary facilities which would normally be required for a mining operation of this size and type are not necessary. The following discusses only those additional ancillary facilities which would be constructed and operated as part of the proposed Rand Project operations.

2.3.5.1. Manpower

Up to eight (8) new employees would be hired as a result of the proposed operations. As with the existing operations, it is anticipated that approximately 25 percent of the new employees (two (2) employees) would live locally, in the towns of Randsburg, Johannesburg and Red Mountain. Approximately 65 percent of the new employees (five (5) employees) would reside in Ridgecrest and commute to the mine site each day. The other 10 percent of the new employees (one (1) employee) would reside in another community in the regional area and commute to the mine site each day. Because carpooling is prevalent in this area, approximately two (2) to three (3) additional trips per day between Ridgecrest or other communities in the region and the project site are expected. This additional traffic would be spread over a 24-hour period. During the first construction phase of the project, which would last approximately five (5) months, it is anticipated that an average of approximately 20 contract construction workers would live in Ridgecrest and commute seven (7) days a week to the project site, resulting in approximately an additional 15 trips per day.

2.3.5.2. Water Supply

All process water required for the project would be obtained from RMC's existing water supply system, which is located in the northeastern portion of the Fremont Valley. All water used in the processing of the ores which does not evaporate would be reused in the process. Table 2-10 outlines the anticipated water consumption of the Rand Project. Under the proposed

project, approximately 75 percent of the water would be used in the process facility and approximately 25 percent would be used for dust control. Potable water consumption by RMC would remain essentially constant and would continue to be supplied by the RCWD.

Table 2-10: Planned Approximate Water Consumption for the Rand Project

YEAR[1]	LEACHING[2]	RECLAMATION[2]	DUST CONTROL[2]	TOTAL[2]
1999	2	0	0	2
1996	80	0	0	80
1997	486	0	147	633
1997	498	0	147	645
1999	519	0	76	671
2006	554	0	112	666
2001	519	72	147	738
2008	519	86	147	702
2003	519	0	147	666
2004	519	0	147	666
2005	433	86	147	666
2006	252	142	43	437
2007	142	0	0	142
2008	80	101	0	142
2009	0	142	0	142
2010	0	41	0	41
2011	0	0	0	0
TOTALS	5,159	514	1,366	7,039

1 - Assumes the annual processing of 60,000,000 tons of ore to the year 2006
2 - Values in acre-feet per year

2.3.5.3. Power Supply and Utilities

Electrical power for the Rand Project would continue to be supplied from SCE's distribution powerlines through above-ground and/or below-ground powerlines. Emergency power requirements for the proposed facilities would

be provided by two (2) 350 kW diesel-powered electric generators located at the Lamont Valley and Descarga process facilities. If required, the fiber optic telephone line currently located adjacent to the Baltic open pit would be relocated to the east (Figure 2-7). The existing telephone line in the West Valley area would be relocated to the north.

Directional outdoor lighting for the operations would be utilized, as necessary, in the waste rock stockpile and leach pad areas when operations occur during non-daylight hours. Other facilities would have only indoor lighting, with the possible exception of "street lights" located at process plants, parking areas and entrances to buildings for safety reasons.

2.3.5.4. Chemical Storage

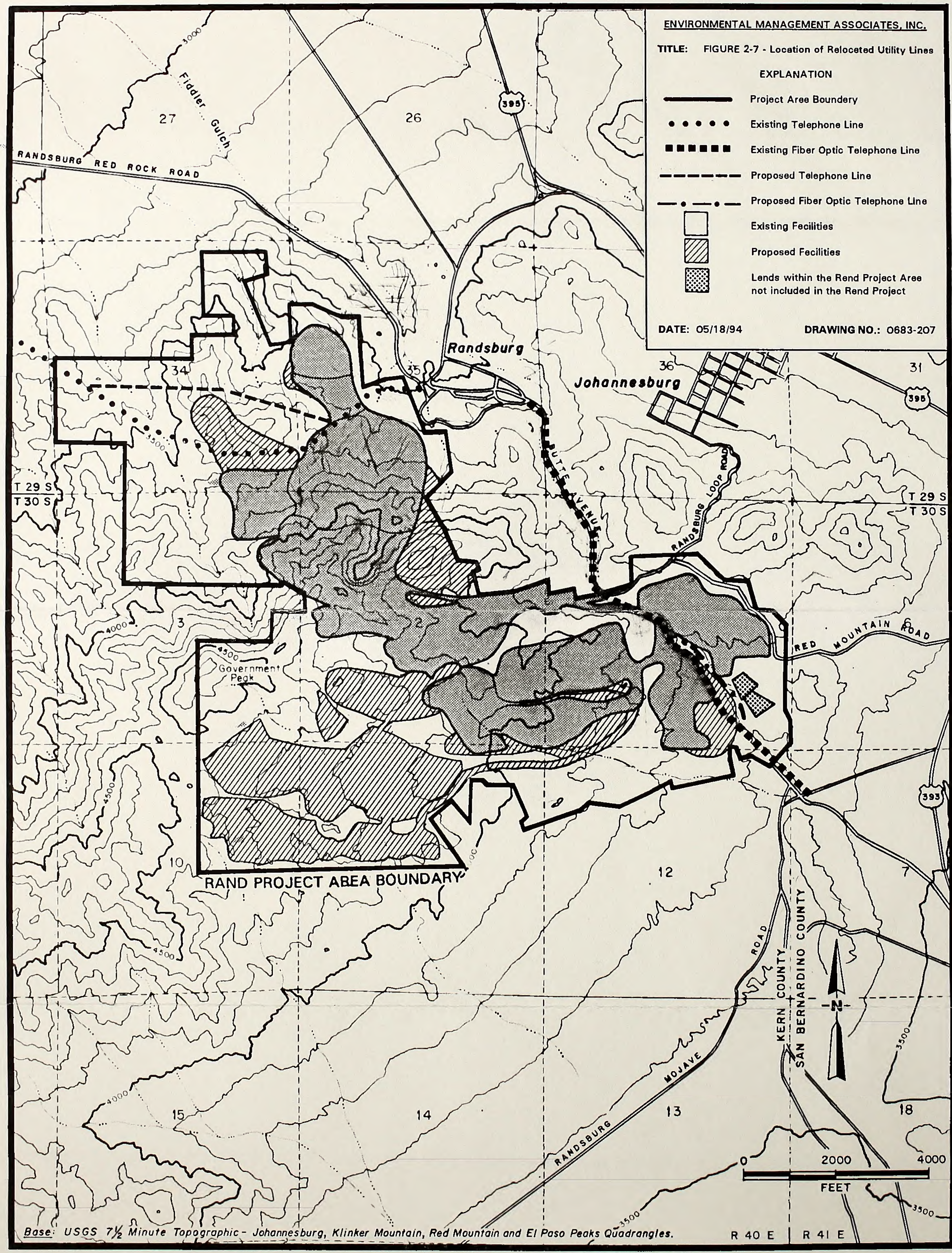
The type and quantities of chemicals which would be used on the Rand Project are essentially the same as those for existing operations. All chemicals, except the calcium oxide, would also be stored in closed, weather-proof containers in secured, open air storage areas. The calcium oxide would continue to be stored adjacent to the Yellow Aster and Baltic heaps. All chemicals would be stored in conformance with state and federal regulations and company safety policies.

2.3.5.5. Waste Disposal

No changes in waste disposal practices are planned as part of the proposed operations.

2.3.5.6. Roads

Under the proposed Rand Project, there would be no changes to access roads to the project area, and no appreciable changes to the access roads into the project area, although new temporary haul and access roads would be constructed within the project area. However, access to the existing Sunshine Mine area, which is located adjacent to the Rand Project area to the south,



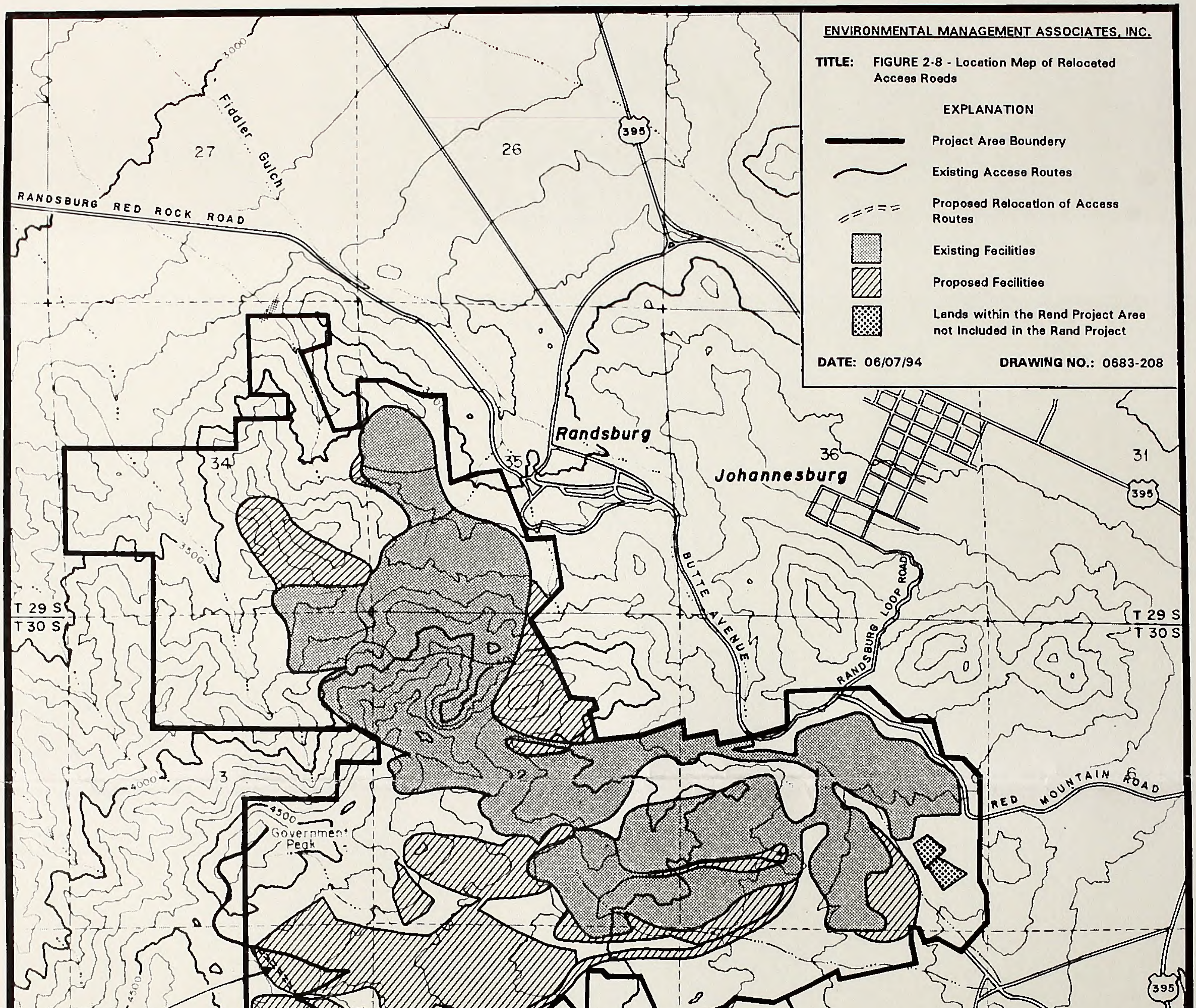
ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-7 - Location of Relocated Utility Lines
EXPLANATION
Project Area Boundary
Existing Telephone Line
Existing Fiber Optic Telephone Line
Proposed Telephone Line
Proposed Fiber Optic Telephone Line
Existing Facilities
Proposed Facilities
Lands within the Rand Project Area not included in the Rand Project
DATE: 05/18/94
DRAWING NO.: 0683-207
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
N
0
2000
4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

and which is currently provided by an existing dirt road network administered by the BLM through Section 12 and the east half of Section 11 (Township 30 South, Range 40 East, MDB&M), would be negated through construction of the Rand Project. Therefore, the Rand Project proposes to relocate access to the Sunshine Mine area by replacing the existing access road with a new dirt road located approximately 700 feet south of the Rand Project boundary in the NW¼ of Section 12 (Figure 2-8).

Existing access to the radio and telephone facilities located on Government Peak would also be altered by the Rand Project through construction of the Lamont Valley heap leach pad. Relocated access would be provided by replacing the dirt road administered by the BLM (Route 85), which crosses through the east half of Section 11 and the NE¼ of Section 10 (Township 30 South, Range 40 East), with a dirt road alignment to the south of the existing access in Section 10 (Figure 2-8). Although this new southern access road traverses the southeast corner of the proposed project area, proposed Rand Project activities would not commence in this portion of the Rand Project area until approximately the year 2001. Should a new access alignment be required at that time, an additional re-alignment would be designed and permits obtained in accordance with appropriate federal, state, and local agencies. These new roads would be designed to meet BLM road standards, as defined in BLM Manual Section 9113.

2.3.5.7. Ditches and Surface Flows

To minimize impacts from erosion on the project area and down surface-gradient areas, all mine facilities, such as the heap leach facilities, waste rock stockpiles, topsoil stockpiles, and roads, would be designed and constructed with appropriate erosion control features. Erosion control features would be designed to meet the performance standards of Title 14 CCR, Chapter 8, Article 9, Section 3706 (see sections of the Proposed Reclamation Plan, Section 2.3.7, below). Surface runoff and drainage would be controlled and delivered to natural drainage channels at velocities that minimize erosion.



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-8 - Location Map of Relocated Access Roads
EXPLANATION
Project Area Boundary
Existing Access Routes
Proposed Relocation of Access Routes
Existing Facilities
Proposed Facilities
Lands within the Rand Project Area not Included in the Rand Project
DATE: 06/07/94
DRAWING NO.: 0683-208
RANDSBURG RED ROCK ROAD
Fiddler Gulch
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
Government Peak Access Road
BLM Route #22
BLM Route #24
BLM Route #85
BLM Route #20
Sunshine Mine Access Road
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
395
N
0
2000
4000
FEET
R 40 E
R 41 E
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

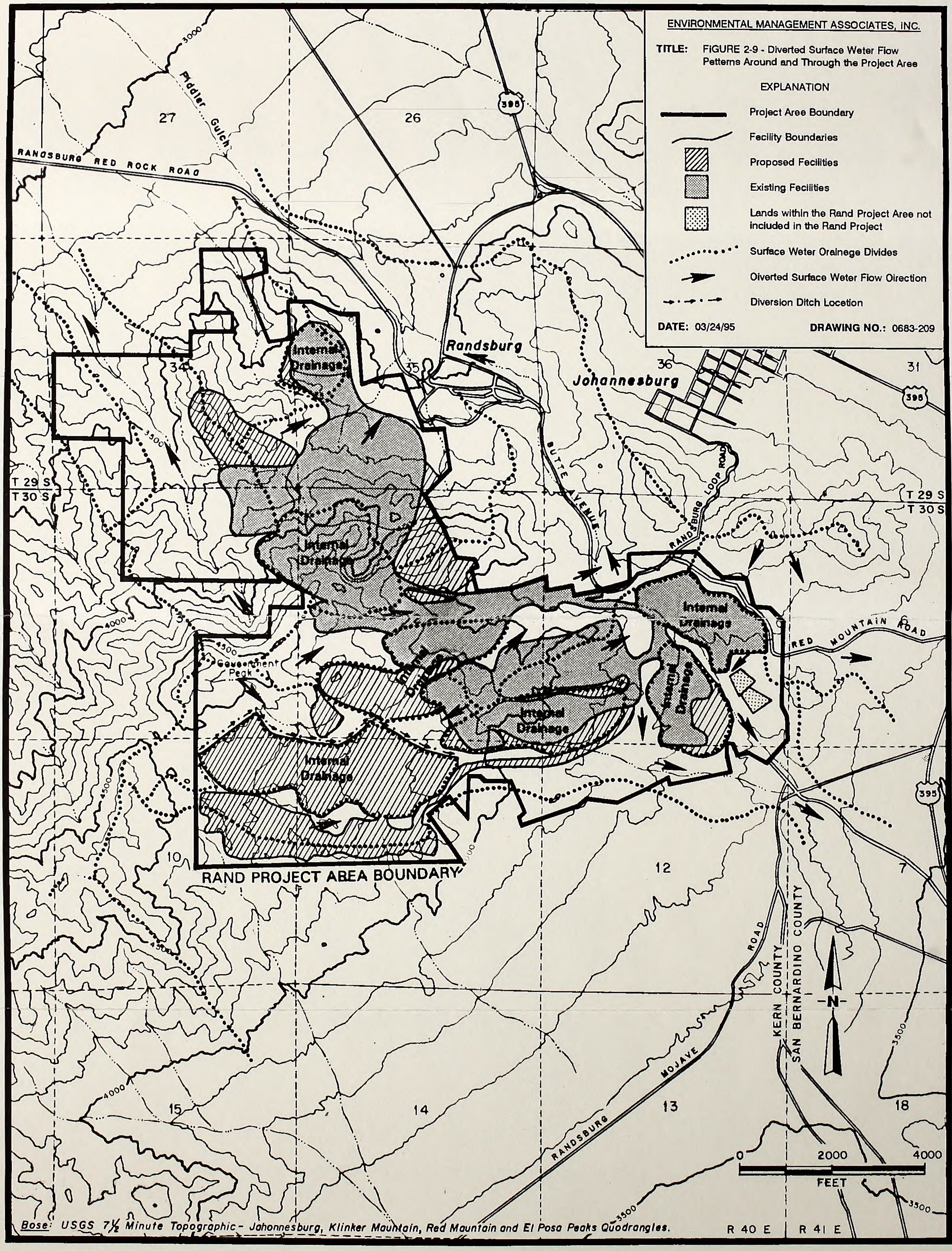
Under the Proposed Action, some additional drainages would be diverted around the project facilities. The resultant flow patterns are shown on Figure 2-9. Storm water surface flows would be routed away from the heap leach facilities, waste rock stockpiles and open pits by diversion ditches. Energy dissipators would be constructed at the end of the ditches to minimize the potential of erosion from the diverted run-off. Figure 2-10 shows the location and general design of the diversion ditches around the Lamont Valley and Descarga heap leach pads. The open pits would be internally drained, and all direct precipitation into the open pits would collect on the pit floors and be allowed to evaporate and/or infiltrate. All other storm water surface flows would be allowed to flow through the project area.

2.3.5.8. Fences

Prior to the initiation of construction under the Proposed Action, the ponds and project facilities would be fenced with 6-foot chain link fence. In addition, the entire project boundary would be fenced with 3-strand wire and tortoise-exclusion fence, with the exception of the BLM Route 85 corridor through the project area.

2.3.6. Exploration

Exploration activities are planned for all areas of public and private lands within the 2,520-acre Rand Project area. A total of 50 acres of disturbance is proposed under this exploration plan; however, some of the areas planned for exploration activities have been subjected to previous exploration activities. These exploration activities may include geophysical surveying, geochemical sampling, mapping, drilling and bulk sampling. The exploration drilling would be conducted in two (2) general target areas, those near and adjacent to existing mining operations, and those in areas of potential extensions of favorable geologic formations.



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-9 - Diverted Surface Weter Flow Petterns Around and Through the Project Area
EXPLANATION
Project Aree Boundary
Fecility Boundaries
Proposed Fecilities
Existing Fecilities
Lands within the Rand Project Aree not included in the Rand Project
Surface Weter Orainege Divides
Oiverted Surface Weter Flow Oirection
Diversion Ditch Location
DATE: 03/24/95
DRAWING NO.: 0683-209
RANDSBURG RED ROCK ROAD
Fiddler Gulch
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Internal Drainage
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
395
N
0 2000 4000
FEET
R 40 E
R 41 E
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

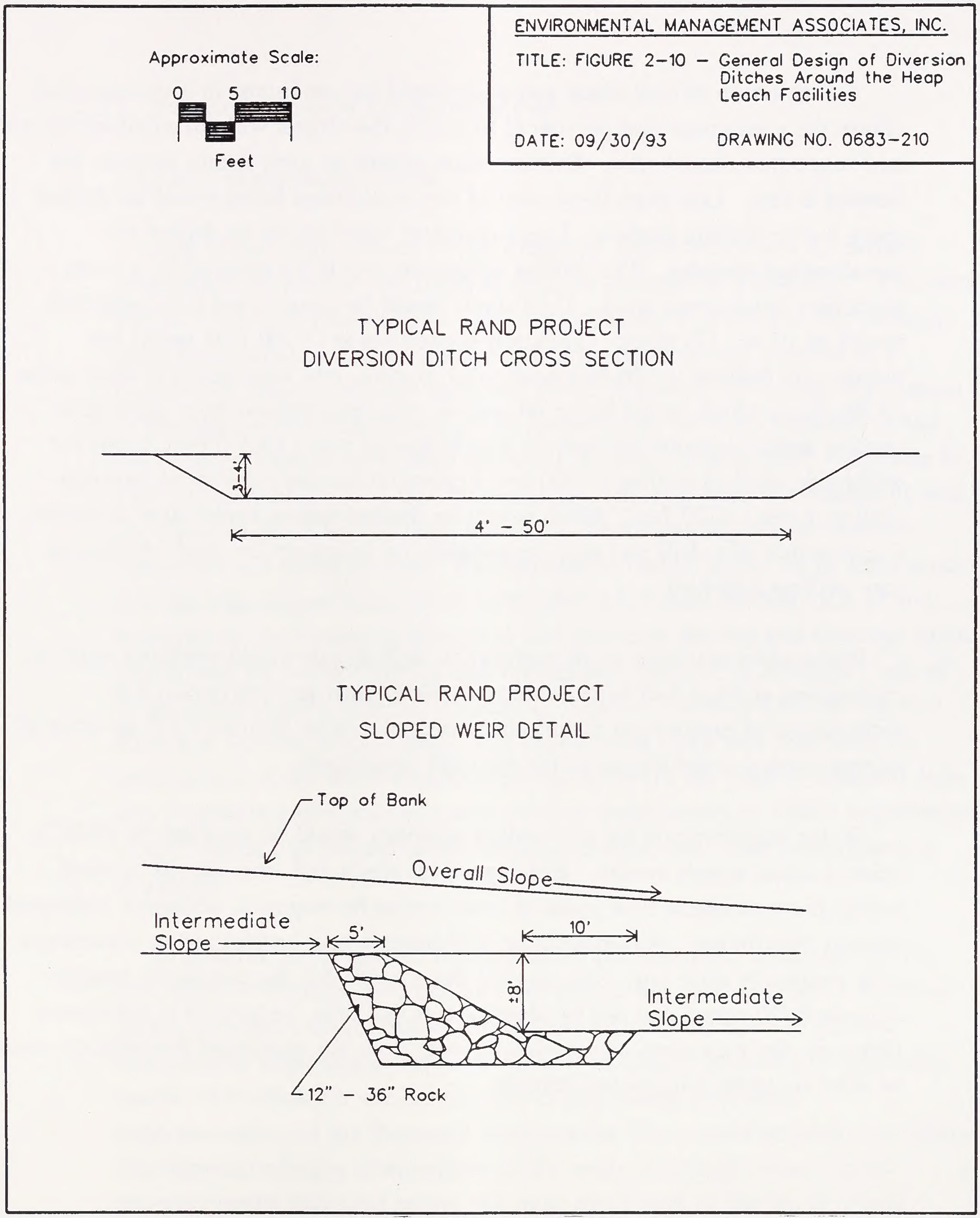


Figure 2-10: General Design of the Diversion Ditches Around the Heap Leach Facilities

Construction of drill roads and pads would be conducted in a manner that allows the equipment and personnel to access the targets without unnecessary soil and vegetation disturbance. Existing roads would be used if they provide the needed access. Less than 10-percent of the exploration holes would be drilled using a core-drilling method. Large diameter holes would be drilled for metallurgical samples. The drilling equipment would be serviced by a water truck/pipe truck/crane truck. Drill roads would be constructed for access and would be of two (2) types: (1) closely-spaced roads (<200 feet apart) for tighter-grid drilling (<500 feet horizontal spacing) and long-duration deep holes (>500 feet), which would be an all-season, pre-development type adjacent to existing mining operations; and (2) widely-spaced roads (>200 feet apart) for wider-grid shallow drilling (>500 feet horizontal spacing) and short-duration shallow holes (<500 feet), which would be limited-season exploration activities. Construction of a drill pad may occasionally be necessary for angle drilling or core drilling activities.

Exploration activities of all exploration drill targets would continue until the exploration acreage had been exhausted, taking into account concurrent reclamation of exploration disturbance, as discussed in Section 2.3.7, or when all mining related activities under the plan are completed.

Water requirements for exploration activities would be supplied be RMC's existing water supply system. Existing access roads and trails would be used, except in areas where new roads or trails would be required, minimize additional surface disturbance. All exploration drill holes would be plugged in accordance with applicable state law. Site-specific disturbance for the maximum acreage identified (50 acres) can not be identified at this time, because it is not known. However, the maximum anticipated impacts from the maximum disturbance would be used to assess anticipated impacts.

2.3.7. Detailed Proposed Reclamation Plan

2.3.7.1. Reclamation Goals

The reclamation portion of the Proposed Action addresses all surface disturbance created by the Rand Project, as outlined in Table 2-11. The Rand Project Proposed Reclamation Plan also addresses a portion of the existing surface disturbance at the Lamont and Descarga sites not covered by a reclamation plan previously approved under SMARA (the remaining portion of existing surface disturbance at the Lamont site has been included in the Baltic Mine Reclamation Plan, approved in 1992) (USDI, 1992, Appendix B). The reclamation goals of this Proposed Reclamation Plan are consistent with the land use goals for the area, which are future mining, wildlife habitat, recreation and sheep grazing. Reclamation activities would be in accordance with the regulations found at 43 CFR 3809.1-3(d) and the SMARA (Public Resource Code Section 2710 et seq) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) Title 14, Chapter 8, Article 1, Section 3500 et seq; and Article 9, Section 3700 et seq). The post-mining goals and objectives for reclamation of the Rand Project area are to return the land to a similar land use, to ensure public safety, and to prevent unnecessary or undue degradation of the federal and private lands during operations and until reclamation is successful.

In general, the Proposed Reclamation Plan includes: measures for the protection of wildlife, livestock and the public; minimizing erosion and mass failure potential; demolition of structures and neutralization of process components; regrading of selected cut and fill slopes; and, where applicable, measures to allow for the resumption of pre-mining land uses. Implementation of the Proposed Reclamation Plan would not limit the future development of mineral resources in the area. Currently, uneconomic precious metal resources within the walls and floors of the mines would remain accessible for future development. In addition, waste material in the waste rock stockpile would be available for future development.

Table 2-11: Surface Disturbance to be Reclaimed Under the Reclamation Portion of the Proposed Action

ITEM	PROJECT FACILITY	ACRES
Operations Conducted Under the Rand Project	Yellow Aster Pit Expansion	52
	Baltic Pit Expansion	18
	Lamont Pit Expansion	21
	Satellite Pits	41
	Lamont Valley Waste Rock Stockpile Expansion	94
	West Valley Waste Rock Stockpile	64
	Lamont Valley Leach Pad	185
	Descarga Area Leach Pad Expansion	4
	Lamont Valley Topsoil Stockpile	11
	Haul and Exploration Roads	21
	Total Proposed Surface Disturbance for the Rand Project:	511
Other Surface Disturbance Created by RMC not already subject to a Reclamation Plan	Lamont Site	32
	Descarga Site	30
	Total to be Reclaimed under the Rand Project Proposed Reclamation Plan:	573

The reclamation approach and procedures outlined in this Proposed Reclamation Plan were developed for the site-specific conditions of the Rand Project area. The procedures were developed to address several factors which affect revegetation of the Rand Project site, including:

- Growth of desert plants is slow even under the most favorable conditions, and revegetation is also slow;
- Weather is the single most influential factor, and its extreme variability confounds revegetation planning and brings mixed results;
- Wind and dryness are enemies of revegetation; both are present in quantity on the project site;
- Artificially augmented plant growth brings on additional risk; watering and fertilization enhance leaf growth which can be supported only by continued

regular care for an indefinite period of time. Also, both watering and fertilization increase plant palatability to herbivores; and

- Continued presence of herbivores reduces the likelihood of a revegetation program success.

The above-listed factors suggest that the most successful revegetation plan is one which relies primarily on natural processes and requires little intervention once site preparation is complete. The procedures are designed such that the mining-related disturbance areas are reclaimed to a productive use similar to the pre-mining land uses, and the reclaimed areas are visually and functionally compatible with the surrounding topography. The reclamation procedures proposed for the Rand Project incorporate six (6) basic components:

- Establishment of stable topographic surface and drainage conditions that are compatible with the surrounding landscape and serve to control erosion.

- Establishment of soil conditions most conducive to establishment of a stable plant community through stripping, stockpiling and reapplication of suitable growth material.

- Revegetation of disturbed areas, using plant species adapted to the area, as specified in the revegetation section of the reclamation plan, in order to establish a long-term productive biotic community compatible with proposed post-mining land uses. The vegetative cover would be capable of self-regeneration without the long-term dependency on irrigation, soil amendments or fertilizers.

- Consideration of public safety through stabilization, removal, and/or fencing of structures or land forms that could constitute a public hazard.

- Minimize the outward regrading or reshaping of slopes to reduce further impacts to undisturbed wildlife habitat.

- Consideration of the long-term visual character of the reclaimed area.

The general reclamation goal at the Rand Project is to reclaim the site to a stable, functioning landscape unit/ecosystem to allow for similar land uses as currently exist. Present and pre-mining land use of the Rand Project area includes mining, recreation (target practice and off-highway vehicle use), wildlife habitat, and, to a lesser extent, sheep grazing. Post-mining land use is expected to be similar. Based on the existing site conditions, the Proposed Reclamation Plan proposes to establish conditions that would promote the long-term development of a creosote bush scrub vegetation community typical of the local area. The Proposed Reclamation Plan would include: measures for the protection of wildlife, livestock and the public; minimizing erosion and mass failure potential; demolition of structures and neutralization of process components; regrading of selected cut-and-fill slopes; and, where feasible, measures to allow for the resumption of pre-mining land uses. Implementation of the Proposed Reclamation Plan would not limit the future development of mineral resources in the area. Currently, uneconomic precious metal resources within the walls and floors of the mines would remain accessible for future development. In addition, waste material in the waste rock stockpile would be available for future development.

The reclamation effort would encompass several levels of activity, which would be applied as needed for each specific type of surface disturbance. The following is an explanation of the reclamation activity levels to be applied in the Proposed Reclamation Plan:

Level One: Only reclamation activities to protect the public, livestock and range wildlife. These activities would include perimeter fencing, sign posting, the installation of road berms, and stabilization of slopes, as necessary.

Level Two: Reclamation activities, including regrading and revegetation.

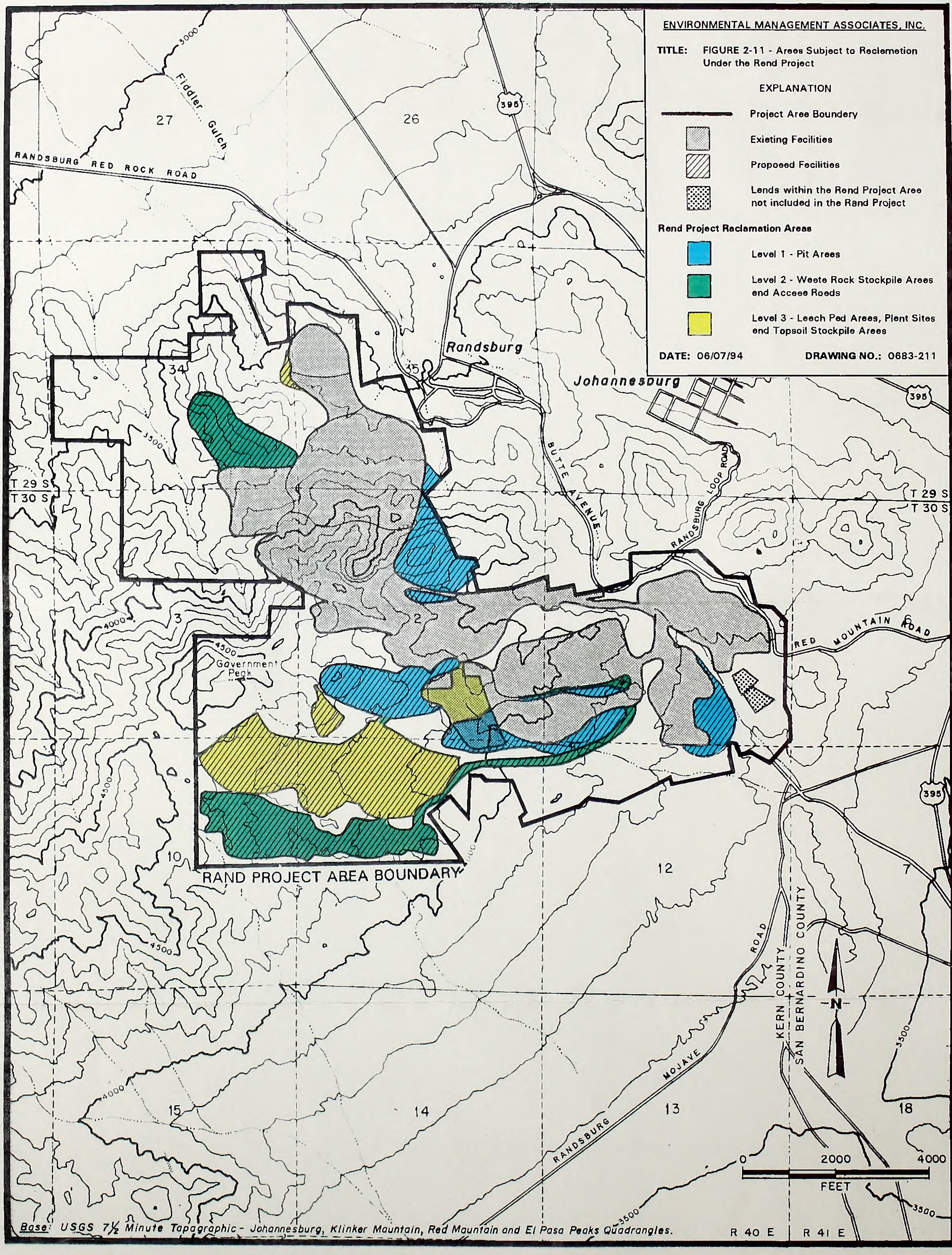
Level Three: Surface structure demolition with regrading and seeding using predominantly plant species adapted to the area, as specified in the revegetation section of the reclamation plan. Heaps and pond structures would be neutralized prior to regrading and revegetation activities.

The same level of revegetation activities would occur under Level Two and Level Three reclamation. Figure 2-11 shows which areas of the project would be subject to the specific reclamation levels outlined above.

2.3.7.2. Schedule

Reclamation of the Rand Project would be initiated when individual process components are no longer required for mine operations or when facilities are decommissioned and site closure begins. Removal of facilities, rough grading and scarifying activities may occur at any time during the project. When ore reserves are exhausted, mining operations would stop. Leaching operations would stop after uneconomic recovery rates are reached. Closure would commence after reclamation earthwork is completed. It is foreseeable that the heap leaching activities would remain active after mining activities have stopped, due to the length of time required to complete leach cycles. In this case, open pit and some ancillary facility reclamation and closure activities would occur in advance of heap leach reclamation and closure.

Soil distribution and revegetation activities are limited by the time of year during which they can be effectively implemented. Table 2-12 outlines the anticipated revegetation schedule on a monthly basis which would be followed to achieve the reclamation goals set forth above. Site conditions and/or yearly climatic variations may require that this schedule be modified to achieve revegetation success.



ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-11 - Areas Subject to Reclamation Under the Rand Project
EXPLANATION
Project Area Boundary
Existing Facilities
Proposed Facilities
Lands within the Rand Project Area not included in the Rand Project
Rand Project Reclamation Areas
Level 1 - Pit Areas
Level 2 - Waste Rock Stockpile Areas and Access Roads
Level 3 - Leach Pad Areas, Plant Sites and Topsoil Stockpile Areas
DATE: 06/07/94
DRAWING NO.: 0683-211
RANDSBURG RED ROCK ROAD
Fiddler Gulch
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
R 40 E
R 41 E
N
0 2000 4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

Table 2-12: Anticipated Reclamation Schedule

TECHNIQUES	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Soil Distribution												
Seedbed Preparation												
Seeding												
Note: Regrading activities could occur year round.												

Concurrent and Interim Reclamation

Concurrent reclamation activities would begin with the stabilization and seeding of the growth media stockpiles during the construction phase of the mine and leach pad complexes. Areas no longer needed for mining activities would be available for concurrent reclamation. Concurrent reclamation would involve stabilization and seeding of new or upgraded access roads, cut and fill slopes, solution pond berms, waste rock dump benches and bare areas around buildings. The interim reclamation of topsoil stockpiles would consist of either seeding with a nitrogen-fixing species or an annual grass species, or on-site trials would be conducted with different species and/or planting techniques on portions of the stockpile. Exploration roads would be reclaimed concurrently with mining operations when it is determined that the roads are no longer needed for exploration or mining operations.

Post-Closure Reclamation

Closure and post-closure reclamation activities would commence when the ore bodies are exhausted and mining has ceased. It is estimated that this terminal phase of reclamation would take one (1) to three (3) years to complete following cessation of mining. Post-closure monitoring of vegetation

success, erosion control procedures and water quality in the ponds is expected to account for an additional two (2) to six (6) years.

2.3.7.3. Revegetation Activities

To aid in the revegetation of the project area, the naturally vegetated areas between the disturbed areas, such as between roads and pits, would be managed as undisturbed buffers to serve as a natural seed source and provide protection for small mammals and reptiles. In addition to these undisturbed buffers, other revegetation activities include: contouring and shaping, soil salvage and stockpile areas, revegetation of test plots, topsoil reapplication, seedbed preparation, seeding and planting, and seed mixtures and rates.

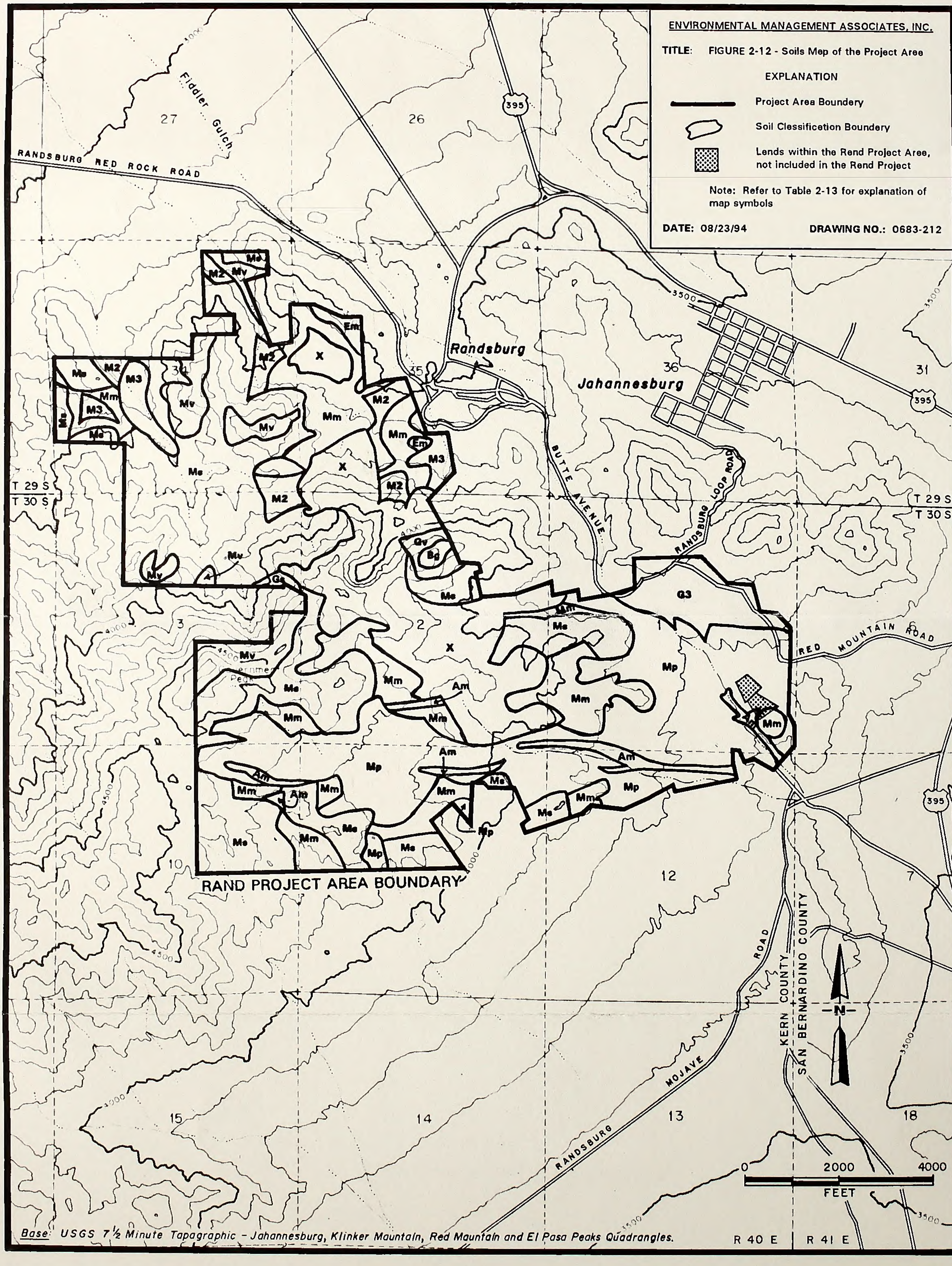
Contouring and Shaping

Slopes would be shaped for reclamation depending on the type of material, erodibility, and the considerations of the mining process. Overall slope grades would range from near 1 horizontal (1H):1 vertical (1V) (45 degrees) for the pit walls to near-flat. After closure, the pit highwalls would be left in a stable configuration, subject to natural processes.

Final grading of cuts and fills in unconsolidated material would create undulating land forms that are stable, do not allow for extensive pooling or ponding, and blend with the surrounding undisturbed topography. Final grading would minimize erosion potential and additional surface disturbance and would facilitate the establishment of post-mining vegetation. Sharp edges would be rounded and straight lines would be altered to provide contours which are visually and functionally compatible with the surrounding terrain.

Soil Salvage and Stockpile

Within the Rand Project area there are 12 soil map units (Figure 2-12; Table 2-13; Appendix C). Approximately 50 percent of the soils in the portions of the project area to be disturbed as part of the proposed project


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 2-12 - Soils Map of the Project Area
EXPLANATION
Project Area Boundary
Soil Classification Boundary
Lands within the Rand Project Area, not included in the Rand Project
Note: Refer to Table 2-13 for explanation of map symbols
DATE: 08/23/94
DRAWING NO.: 0683-212
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
T 29 S
T 30 S
395
RAND PROJECT AREA BOUNDARY
N
0
2000
4000
FEET
R 40 E
R 41 E
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

have surface horizons of between three (3) and six (6) inches and a total soil depth of between ten (10) and 20 inches. Another approximately 40 percent of the soils in the portions of the project area to be disturbed as part of the proposed project have surface horizons of between six (6) and nine (9) inches and a total soil depth of between 20 and 40 inches. RMC plans to stockpile as much topsoil as possible from these areas to be disturbed. The top 0 to 20 inches of soil material from all soils in the project area would be salvaged. In addition, the soils which are associated with active drainages which have soil depths in excess of 20 inches would be salvaged to the greatest depth possible. Prior to construction, soil material would be removed and stockpiled for later use during reclamation activities. Assuming that an average of ten (10) inches of soil material is salvaged, approximately 687,000 cubic yards of topsoil would be stockpiled at the proposed Lamont Valley topsoil stockpile area, or at other existing topsoil stockpiles (Figure 2-5). The Lamont Valley topsoil would be clearly identified with signs to assure that the material was not misidentified as waste rock material. The Lamont Valley topsoil stockpile would not be relocated without written approval from the BLM and Kern County.

The interim reclamation of the soil stockpile would consist of either seeding with a nitrogen-fixing species or an annual grass species, or on-site trials would be conducted with different species and/or planting techniques on portions of the stockpile. Concurrent with the soil salvage operations, RMC would transplant to the soil stockpile areas juvenile, non-articulated Joshua trees less than four (4) feet tall, Golden cholla and Beavertail which are located in areas to be disturbed. RMC would try to avoid the removal of Joshua trees, Golden cholla and Beavertail during construction, operation and reclamation activities. Erosion control methods would be used to re-route any storm flows around the stockpiles to natural drainages at velocities that would minimize erosion.

Table 2-13: Characteristics of Soil Series Within the Project Area

SOIL NAME[1]	SOIL MAP UNIT	FACTORS				
		PERMEABILITY	WATER CAPACITY	SURFACE RUNOFF	WATER EROSION	WIND EROSION
Fluventic Camborthids	Am: Floodplains	Moderately Rapid	Low	Slow	Low	High
Shallow Typic Haplargids	Bg: Granitic Butte	Moderate	Low	Moderate	Moderate	High
Typic Torriorthents	Em: Eolian Sand	Moderate	Very Low	Low	Low	Very High
Orthids-Argids-Orthents	Gp: Granitic Pediments	Moderate	Very Low to Moderate	Moderate to Rapid	Moderate to High	High
Shallow Torripsamments	Gs: Steep Granitic Terrain	Rapid	Very Low	Rapid	High	High
Camborthids-Rock Outcrop	Gv: Very Steep Granitic Terrain	Moderate	Low to Moderate	Rapid	High	High
Very Gravelly Typic Haplargids	M2: Gently Sloping Pediments	Slow	Low to Moderate	Moderate	Moderate	Low
Haplargids-Camborthids	M3: Moderately Sloping Pediments	Slow to Moderate	Low to Moderate	Moderate to Rapid	Moderate	Low
Shallow Typic Camborthids	Mm: Moderately Steep Hills	Moderate	Low	Rapid	Moderate	Low
Gravelly Typic Haplargids	Mp: Dissected Pediments	Slow	Moderate	Moderate	Moderate	Low
Camborthids-Lithic Torriorthents	Ms: Steep Metamorphic Terrain	Moderate	Very Low to Low	Rapid to Very Rapid	Moderate	Low
Torriorthents-Camborthids	Mv: Very Steep Metamorphic Terrain	Moderate	Very Low to Low	Rapid to Very Rapid	Moderate	Low
Unclassified	X: Mechanically Disturbed Land	N/A	N/A	N/A	N/A	N/A

[1] - Alexander, 1993

Revegetation Test Plots

As part of RMC's revegetation activities, a program of test plots to assess species and techniques for revegetation would be implemented. A plan specifying the test plot activities would be prepared and implemented. Results from the test plot activities would be summarized in the annual report submitted to the BLM and Kern County and appropriate recommendations incorporated into the ongoing reclamation activities.

Topsoil Reapplication

Sufficient stockpiled topsoil would be present at the Lamont Valley topsoil stockpile to cover all the areas to be revegetated under the Level Two and Level Three guidelines. Compacted areas would be ripped prior to reapplication of the topsoil. Topsoil would be placed on the prepared areas in the early fall, just prior to seeding, which would occur in the late fall. Topsoil placement would be inspected periodically to ensure a sufficient depth of material is being placed. The surface would be left in a rough or furrowed state to reduce wind and water erosion and to increase available soil moisture in the topsoil layer.

Seedbed Preparation

Seedbed preparation, seeding, and transplant efforts for areas to be revegetated (Level Two and Level Three reclamation areas) would take place after grading, stabilization and growth media placement; however, when soil moisture conditions are so high that compaction would occur during seedbed preparation activities, those activities would cease until soil moisture conditions drop to acceptable levels. The seedbed preparation activities would be performed as follows:

- Compacted surfaces would be loosened and left in a rough condition by ripping.

- Based on the results of the topsoil testing, if soil fertility levels or soil constituents are inadequate to successfully implement the revegetation program, then soil amendments may be applied, and the surface disked, raked or treated to incorporate the amendments into the top four (4) to six (6) inches. Preference would be given to slow-release fertilizers, including mineral and organic materials that mimic natural sources, which would be added in amounts similar to those found in the reference soils under natural vegetation of the type being reclaimed. Soil amendments, including, but not limited to, wood chips, calcium chloride, organic

mulches, gypsum and lime, may be incorporated into the soil to help mitigate compaction problems, improve water infiltration, neutralize acidic or alkaline conditions, modify soil structure, and enhance water holding capacity. Mulches, including rice straw, crushed rock, hay, biodegradable fibers, wood chips, wood fiber and jute, may be used, provided noxious weed seeds are not introduced to the revegetation site.

- The prepared surfaces would then be seeded using the preliminary mixtures and seeding rates as presented in Table 2-14. Species in this seed mix may include both spring and summer germinators. Seeding would either be by rangeland drill, broadcasting or hydraulic seeder, depending on working area and steepness of slope.

- In selected areas, RMC may consider the use of mulch on the relatively harsh sites, such as south-facing slopes.

- In selected areas, RMC may utilize irrigation to enhance revegetation and to promote stabilization of the surface material. This procedure would likely be conducted in, but may not be limited to, the spring season to simulate and supplement natural precipitation, and would likely not continue into the summer. This process would not be conducted on a recurring basis.

Seeding and Planting

The rocky terrain and soil materials in the project area may dictate broadcast seeding, although a range drill would be used in suitable flat terrain. An alternative to seeding for the revegetation activities would be to plant containerized juvenile creosote bushes at a rate of up to 75 percent of the density of creosote bushes in an adjacent undisturbed area. This technique may be used in areas where seeding may not be an acceptable alternative, or where seeding may not be feasible. In addition, the Joshua trees, Golden cholla and Beavertail which were salvaged during the construction phase would be transplanted to the reclaimed areas.

Table 2-14: Species for Use in Preliminary Seed Mix for Reclamation of the Rand Project

SPECIES		APPLICATIONRATE (lbs PLS/Acre[1])
SCIENTIFIC NAME	COMMON NAME	
GRASSES:		
Oryzopsishymenoides	Indian Rice Grass	4
Stipa speciosa	Desert Needlegrass	4
	GRASSES TOTAL:	8
SHRUBS:		
Ambrosia dumosa	Burrobush	4
Larrea tridentata	Creosote Bush	4
	SHRUBS TOTAL:	8
	GRANDTOTAL:	16

1 - PLS equals pure live seed: Broadcast Rate shown; drilled seeding rate equals half of broadcast rate.

Seeding Mixtures and Rates

The seed mixtures to be used on the site have been determined by pre-mining vegetation and habitat types that exist in the area, known climatic and soil conditions of the project area and, to a lesser extent, seed availability. The seed mixtures presented are preliminary in nature and would be finalized based on site-specific reclamation studies conducted on areas undergoing concurrent reclamation and consultation with the BLM and Kern County. The seed mixtures would be either broadcast seeded or drilled. Final choice of plant species would be dependent on commercial availability of seed. Commercial seeds would be purchased from as local a source as possible. In addition, RMC may collect seeds from the project area to use in on-site trials and during final reclamation. Any substitutions to the seed mix would be approved by the BLM and Kern County. For broadcast applications, equipment such as a "cyclone" spreader would be used to distribute 16 pounds per acre of pure live seed, followed by dragging with a light chain or other means to provide some soil cover on the seed. When possible, a range drill

would be used for more effective seeding. An application rate of eight (8) pounds of pure live seed per acre would be used with the range drill and seeds would be placed at a depth of two (2) to three (3) inches.

Weed Control

During the initial stages of the revegetation process, invader (weed) species would be expected in the revegetated areas. As the revegetation process progressed, the natural succession of species would tend the force the invader species from the area. Weed species in revegetated areas would be managed: (1) when they threaten the success of the proposed reclamation; (2) to prevent spreading to nearby areas; and (3) to eliminate fire hazard. Topsoil stockpiles and areas prepared for revegetation will be seeded as quickly as possible to prevent invasion by weeds. Methods to control undesirable species would be primarily through hand cultivation, although mechanical cultivation would be considered, based on the extent of the problem.

2.3.7.4. Facilities Closure/Dismantling

The tortoise exclusion fencing constructed for the project operations would be maintained in place until revegetation was completed and determined successful for bond release by the BLM and Kern County. At that time, the fencing would be removed.

Topsoil Stockpiles

After growth media has been removed from the stockpiles for replacement on other sites, the surface would be loosened, if necessary, to alleviate compaction and seeded with the appropriate seed mixture for the area as described under the Level Three guideline.

Pits Closure

During active mining, reclamation in and around the pits would be limited to controlling erosion of the haul roads. Upon final closure, the mines would be reclaimed under the Level One guideline, leaving pit sidewalls in a stable condition, in accordance with Mine Safety and Health Administration regulations. A typical cross section of the final configuration of a pit wall is shown in Figure 2-13. A berm or 3-strand barbed wire fence would be constructed across the haul roads to prevent vehicle access to the pits. Access to all other portions of the open pits would also be limited by a 3-strand barbed wire and tortoise exclusion fence, which would be constructed during the initial phases of the operations and would be sufficient to protect the public, as well as livestock and wildlife. Signs would be posted on the fence around the pits, and any other locations which could pose a threat to public safety, as required by regulation.

The pits, including the currently permitted and extension portions, would encompass 328 acres in final configuration. Because no groundwater has been encountered closer than 200 feet below the bottom of any projected pit floor (Table 2-9), no infiltration of groundwater into the open pits is anticipated and, therefore, no surface impoundment of water in the open pits would occur. There would, however, be temporary accumulations of water in the open pits during and immediately after precipitation events. This water would then infiltrate into the surrounding rock. As discussed in Section 2.2.3, the rock remaining in the floor and walls of the open pits would have excess neutralization potential and, therefore, the waters that would infiltrate into the rock would not likely become acidic.

Waste Rock Stockpile Areas

The waste rock storage areas would be reclaimed under the Level Two guideline. A cross section of the final configuration for a typical waste rock stockpile is shown in Figure 2-14. Upon final mine closure, the tops of the waste rock stockpiles would be crowned to prevent water pooling, ponding,

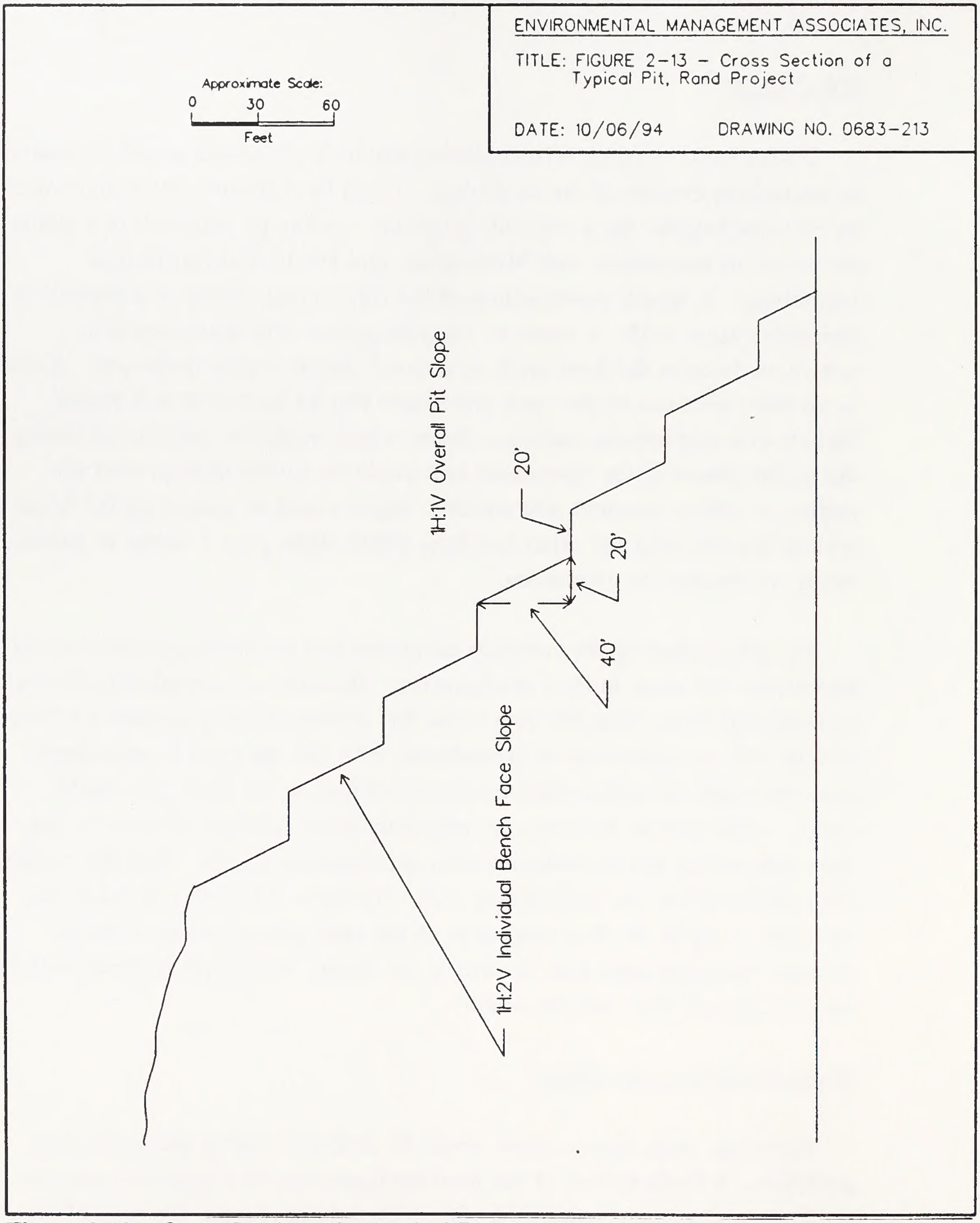


Figure 2-13: Cross Section of a Typical Pit, Rand Project

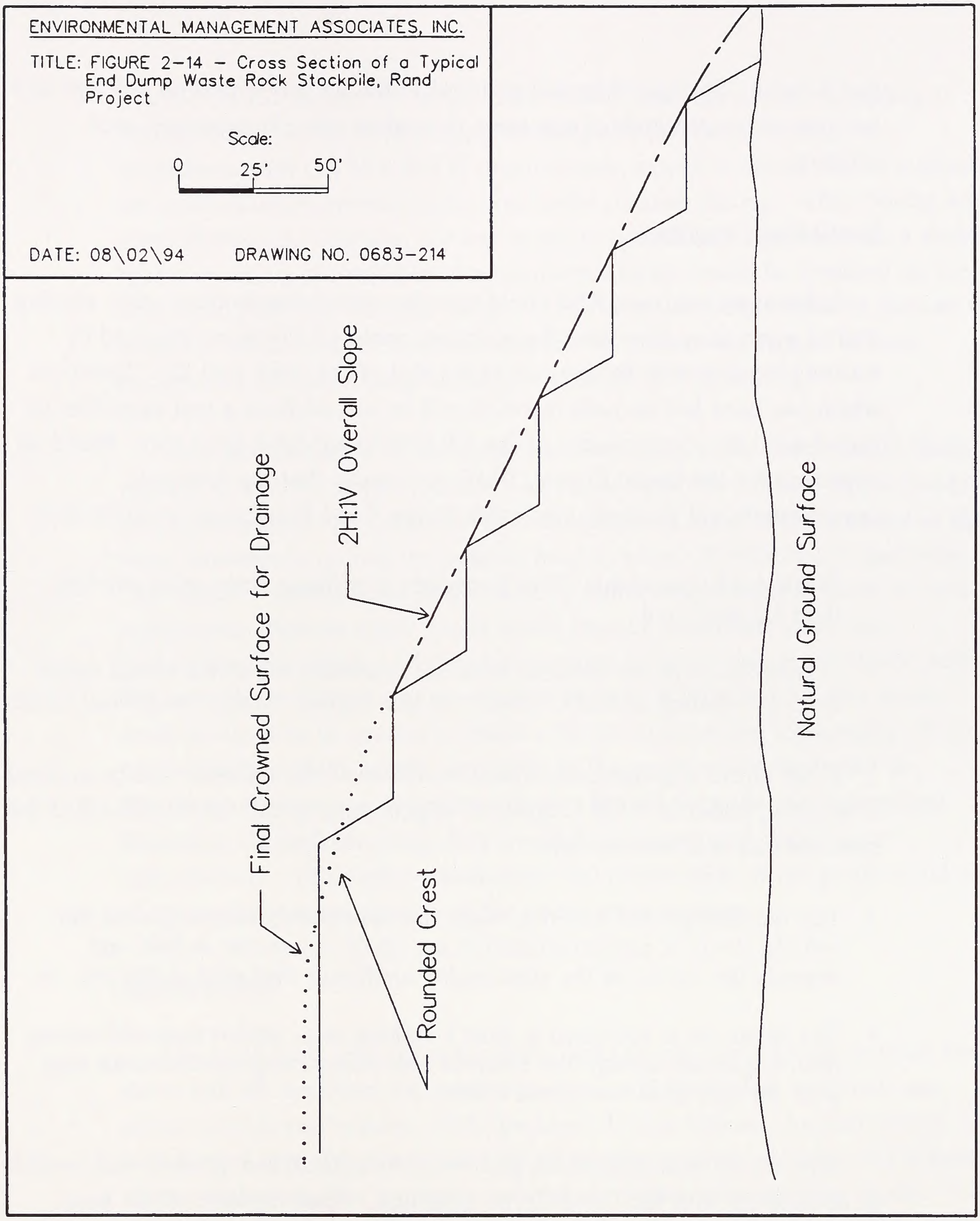


Figure 2-14: Cross Section of a Typical End-Dump Waste Rock Stockpile, Rand Project

and erosion. Stockpiled topsoil material would be distributed on the tops and portions of the stockpile slopes prior to seeding with the proposed seed mixtures.

Leach Pad Complexes

Laboratory analyses, RMC field experience and results from other existing mining operations show that the spent ore material can be neutralized by washing in place with fresh water at the end of the leach pad life. Spent ore which has been left on pads or which will be moved from a pad must first be rinsed until the requirements of the CRWQCB-LR have been met. Based on approvals for the Baltic Project, RMC anticipates that the following requirements will be made applicable to the Rand Project and must be met:

- Weak Acid Dissociable (WAD) cyanide in effluent rinse water are less than 0.2 mg/l; and
- Contaminants in any effluent from the processed ore which would result from percolating meteoric waters will not degrade surface or ground water.

If the above requirements cannot be achieved, the operator can be granted a variance, under 23 CCR Chapter 15 regulations, by the CRWQCB-LR if the operator can demonstrate that:

- The remaining solid material, when representatively sampled, does not contain levels of contaminants that are likely to become mobile and degrade the waters of the state under conditions that exist at the site; or
- The spent ore is stabilized in such a fashion as to inhibit meteoric waters from migrating through the material and transporting contaminants that have the potential to degrade water.

The ore on each heap leach pad would be neutralized, graded, and seeded in accordance with the Level Three guideline. Neutralization of the heap leach pile would be accomplished by rinsing to reduce cyanide levels to meet the requirements in the Waste Discharge Order, which must be issued by the

CRWQCB-LR before use of the leach facility can commence. Sampling at various depths in the heap through drilling and laboratory testing, in accordance with CRWQCB-LR requirements, would be conducted to evaluate the neutralization process at the conclusion of heap rinsing. After rinsing and neutralization is complete, the top of the heaps would be graded with a slight crown to reduce the amount of precipitation which would be retained on the heaps and percolate through them. The sides of the heap would be worked to a 2H:1V finished slope. Certain benches would remain. A typical cross section of a reworked heap leach pile is shown in Figure 2-15.

Once neutralization of the heaps has been completed, which would likely require at least 12 months, all rinse solutions would be drained to the ponds for neutralization and evaporation. A neutralizing agent may be added to the rinse solutions to reduce the cyanide level to meet CRWQCB-LR standards. The waters would then be disposed of by either evaporation in place or land application. Process water ponds would then be reclaimed under the Level Three guideline. All fencing would be removed and the synthetic pond liners would be disposed of as required by the CRWQCB-LR. The pond areas would then be graded to blend with the surrounding topography. Prior to reclamation of the ponds, any solids in the ponds would be tested to determine appropriate disposal methods. Should the solids be determined hazardous through sampling, they would be removed and disposed of appropriately. The final neutralization and reclamation of the pond would not occur until the neutralization of the heaps was complete.

Access Roads

The main haul road, all other RMC links in the road network around the mine, and all remaining exploration roads would be graded, scarified, and revegetated in conformance with the Level Two guideline. As part of this reclamation plan, for those roads for which the roadbase material was placed above local grade, the roadbase material would be removed prior to site preparation for recontouring. The removed roadbase material would be deposited in a waste rock stockpile prior to grading, scarification and revegetation.

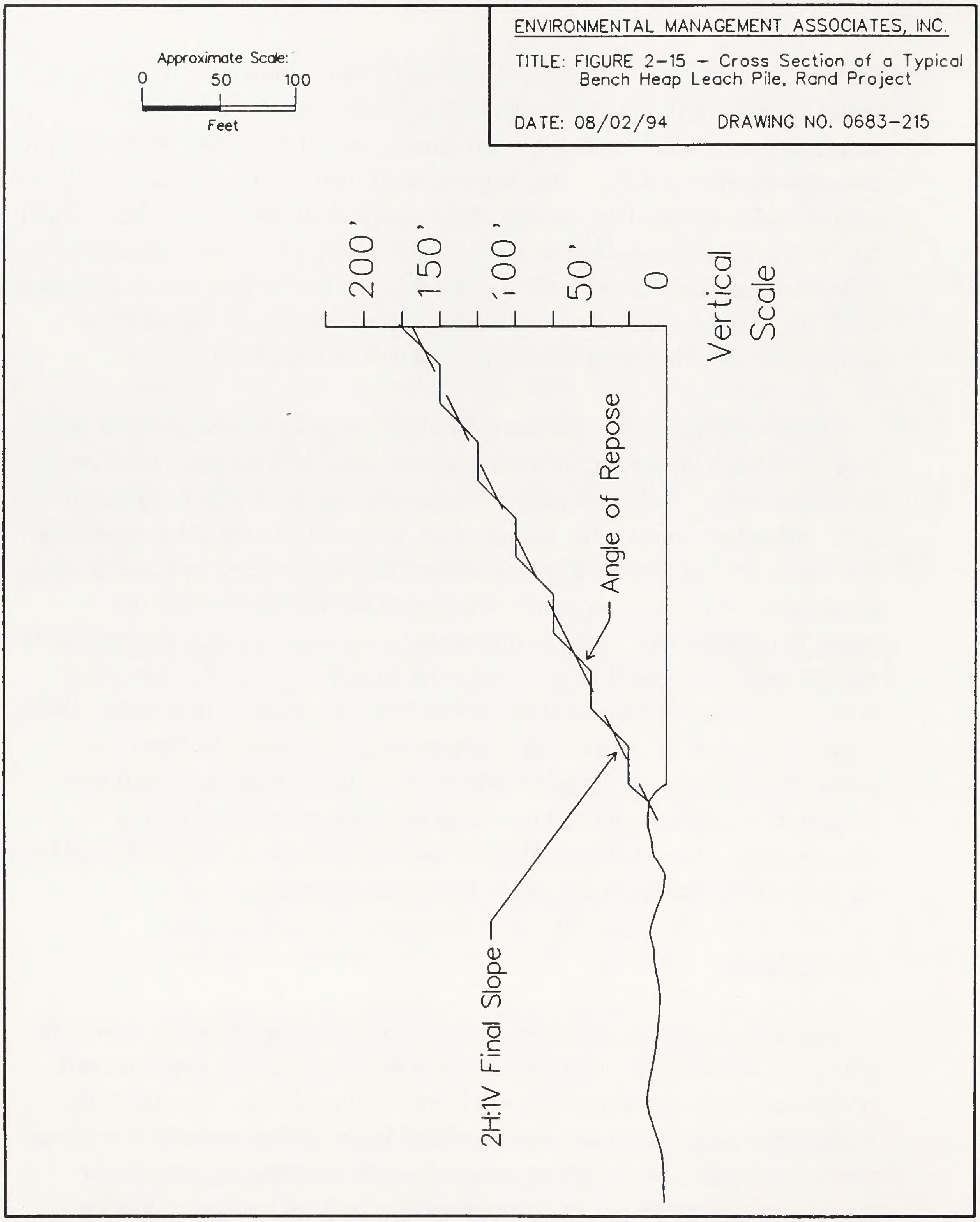


Figure 2-15: Cross Section of a Typical Bench Heap Leach Pile, Rand Project

Buildings and Ancillary Facilities

Buildings and ancillary facilities would be reclaimed under the Level Three guideline. All portable and salvageable structures would be removed and taken off-site. Any permanent structures would be dismantled and removed off site. All building foundations would be broken up and buried under at least one (1) foot of clean fill material. All surplus materials, storage containers and trash would be transported to a landfill authorized to accept this material. The remaining surplus waste products and all fuel oil and similar materials would be removed from the site and disposed of according to current state and federal regulations. Any soil material contaminated by regulated waste materials would be disposed of in accordance with state and federal requirements. The tortoise exclusion fencing constructed for the project operations would be maintained in place until revegetation was completed and determined successful for bond release by the BLM and Kern County. At that time, the fencing would be removed.

2.3.7.5. Monitoring and Reclamation Success Evaluation

By planting in the fall or winter and utilizing the available soil moisture accumulated during winter, growth would be encouraged for most seeds in the seed mix which are spring germinators. Reclamation has a good chance for success in years with average and above-average precipitation, especially if adequate moisture is available during the April through June time period.

Following facility decommissioning, grading to desired slopes, distribution of topsoil/growth medium, and seeding, the principal components of reclamation would be completed and the bonds related to those activities should be released. However, the stability of the graded components and the resumption of pre-mining land uses would largely depend on the establishment of vegetation. Performance with quantitative determinations of revegetation success would trigger final bond release.

Revegetation monitoring would be conducted for a minimum of six (6) years following implementation of the post-closure revegetation activities, but would continue until the revegetation success, as defined in this section of the Proposed Reclamation Plan, has been achieved. At a minimum, monitoring activities would take place during the peak growth and flower time, usually April or May. Once the monitoring date is set, monitoring of the site during subsequent years would occur based on seasonal precipitation or other weather conditions.

2.3.7.5.1. Vegetation

The goal of reclamation is to establish a vegetative cover over the reclaimed area that promotes a stable physical condition and establishes site conditions that would promote the long-term development of a creosote bush scrub vegetation community typical of the local area. There are several terms used to describe the amount and type of vegetation in a given area. These terms include vegetation diversity, vegetation density, vegetation cover and vegetation species-richness. The following definitions for these terms are used in this Proposed Reclamation Plan:

<u>Vegetative Diversity</u> - The distribution and abundance of different plants species within a given reference area;

<u>Vegetative Density</u> - The number of individuals or stems of each species rooted within a given reference area;

<u>Vegetative Cover</u> - The vertical projection of the crown or shoot area of a species to the ground surface expressed as a percent of the total reference area; and

<u>Vegetative Species-Richness</u> - The number of different plant species within a given reference area.

The terms vegetation density and vegetation cover provide similar measures of the amount of vegetation in a given area. The terms

vegetation diversity and vegetation species-richness provide similar measures of the numbers of species within a given area.

The site conditions of low annual rainfall and variable annual conditions necessitate vegetation monitoring parameters that are not highly susceptible to annual fluctuation in climatic conditions. Given the reclamation goal and the site-specific conditions, the monitoring parameters selected by RMC are the vegetation density and vegetation diversity of the perennial herbaceous and shrub species in the project area. The intent of monitoring would not be to determine the total amount of vegetation in the reclaimed area, since the actual amount of vegetation may be greater than that identified during monitoring, depending on the time of year and the annual climatic conditions.

To establish the appropriate sample size to ensure a statistically valid sample of the vegetative population within a 80-percent confidence interval, an initial sampling of the vegetation density and vegetation diversity of the pre-existing perennial herbaceous and shrub species would be performed prior to construction. Based on the results of this initial sampling, the appropriate number of samples necessary to evaluate revegetation success during monitoring would be determined.

The specific plot size has been designed to address the site-specific conditions. Sample sites consisting of 16 meter^2 plots would be established for the initial sampling and the revegetation success sampling. The actual number of sample sites that would be used during the monitoring of the revegetation activities would be determined based on the results of the initial site sampling.

Prior to construction of the leach pads and the waste rock stockpiles, at least four (4) sample sites would be determined, subject to review by the BLM and Kern County, consisting of 16 meter^2 plots, which would be established in the initial sampling. Two (2) plots would be located adjacent to the proposed project facilities in areas that are anticipated to

not be disturbed as a result of project activities. At least two (2) plots would be located on representative portions of the proposed leach pads and waste rock stockpiles. At each sample site, the two (2) plots would be staked and roped. Within the 16 meter^2 plot the number, location and size of each species would be recorded. Each control plot would be photographed and permanently marked.

Monitoring would be conducted on a bi-annual (every two (2) year) basis. Sampling over a minimum of three (3) monitoring periods would be conducted. Results from the samplings would be analyzed to establish trends in the revegetation success. When the results of the monitoring show that there has been an establishment of 21 percent or more vegetation density, 15 percent or more vegetation diversity and 35 percent or more vegetation cover of the perennial shrub and herbaceous vegetation in the reclaimed and revegetated area, as compared to the initial sampling, then the revegetation effort would have been considered successful.

In the event of initial failure of the revegetation, the BLM and Kern County would be consulted regarding remediation alternatives and revegetation measures that may be undertaken.

2.3.7.5.2. Erosion

Techniques used to control the production of sediment include the overall grading design and the revegetation plan discussed above. Any storm water surface flows would be routed away from the heap leach facilities and topsoil stockpiles with diversion ditches. Additional methods to be employed, if necessary, would include berms, sediment ponds, check-dams composed of rice straw bales, sand bags, silt fences, or other temporary techniques to minimize impacts. Erosion control methods would be designed to handle a 20-year/1-hour intensity storm event, in accordance with standards established by 14 CCR 3706(d) (SMARA regulations), and deliver diverted storm waters to natural drainages at velocities that minimize erosion.

If excessive erosion and sedimentation are observed during the mining operations or exploration activities, then modifications to the erosion control methods would be made to ensure that land and surface water would not be adversely impacted.

2.3.7.5.3. Reporting

An annual report summarizing the findings of the monitoring program would be submitted to both the BLM and Kern County. The report would include the acreage disturbed and reclaimed to date, and the acreage yet to be disturbed and reclaimed. In addition, the annual report would document the reclamation success and failures, extent of reclamation activities, and the results of the test plot activities. Information obtained during the previous years reclamation activities would be reviewed and any necessary modifications to the Proposed Reclamation Plan would be presented in the annual report for incorporation into the ongoing reclamation activities upon approval by the BLM and Kern County.

2.3.8. Financial Assurance

To establish an acceptable bonding instrument for the BLM, Kern County and the State Geologist, RMC would allocate funds to post an irrevocable letter of credit for an amount consistent with both the plan for phased construction and concurrent reclamation of the project and the reclamation cost estimates in the reclamation plan. An estimate of the cost of reclamation of the Rand Project is provided in Table 2-15. A separate financial assurance to cover the neutralization of the pads would be posted with the CRWQCB-LR to meet their separate bonding requirements. The amount of the CRWQCB-LR-held bond would be $2,063,182.50 as estimated by RMC, would be submitted prior to commencement of operations, and would not be adjusted annually. Because RMC would construct the project in phases over several years, the amount of the bond would be adjusted on a yearly basis. Each year the new bond amount would reflect the amount of concurrent reclamation performed in the previous year and the amount of planned construction and operation activities in the next year. The amount of

the bond would be adjusted in consultation with, and approval by, the appropriate agencies in the fourth quarter of every calendar year.

Table 2-15: Reclamation Cost Calculation Tables

COSTS FOR PHYSICAL RECLAMATION						
AREA	ACTIVITY		UNIT	UNIT COST ( )	QUANTITY	TOTAL( )
Roads	Berms	D8N Bulldozer	Hour	150.00	37	5,550.00
	Scarify	14G Grader	Hour	125.00	11	1,375.00
	Topsoil	D8N Bulldozer	Hour	150.00	100	4,500.00
		621 Scraper	Hour	125.00	90	11,250.00
	Seed Set	D8N Bulldozer	Hour	150.00	27	4,050.00
	Seed		Lump Sum			5,880.00
	Broadcast		Lump Sum			4,200.00
Total Road Reclamation Cost						36,805.00
Waste Dump	Rip	D8N Bulldozer	Hour	150.00	50	7,500.00
	Topsoil	D8N Bulldozer	Hour	150.00	108	16,200.00
		621 Scraper	Hour	125.00	324	40,500.00
	Seed Set	D8N Bulldozer	Hour	150.00	100	15,000.00
	Seed		Lump Sum			17,640.00
	Broadcast		Lump Sum			12,600.00
Total Waste Dump Reclamation Cost						109,715.00
Leach Pad	Face	D8N Bulldozer	Hour	150.00	108	134,700.00
	Rip	D8N Bulldozer	Hour	150.00	3	450.00
	Topsoil	D8N Bulldozer	Hour	150.00	77	11,550.00
		621 Scraper	Hour	125.00	231	28,875.00
	Seed		Lump Sum			12,600.00
	Broadcast		Lump Sum			9,000.00
Total Leach Pad Reclamation Cost						197,175.00

COSTS FOR PHYSICALRECLAMATION						
AREA	ACTIVITY		UNIT	UNIT COST ( )	QUANTITY	TOTAL ( )
Topsoil	Scarify	14G Grader	Hour	125.00	7	500.00
	Seed Set	D8N Bulldozer	Hour	150.00	7	1,050.00
	Seed		Lump Sum			3,080.00
	Broadcast		Lump Sum			2,200.00
Total Topsoil Reclamation Cost						6,830.00
Plant Site	Concrete		Lump Sum			5,000.00
	Liner		Lump Sum			5,000.00
	Shape Berm	D8N Bulldozer	Hour	150.00	19	2,850.00
	Topsoil	D8N Bulldozer	Hour	150.00	7	1,050.00
		621 Scraper	Hour	125.00	21	2,625.00
	Seed Set	D8N Bulldozer	Hour	150.00	19	1,500.00
	Seed		Lump Sum			1,120.00
	Broadcast		Lump Sum			800.00
Total Plant Site Reclamation Cost						19,945.00
Open Pit	Salvage Exterior Fence		No Cost			0.00
	New Fencing		Lump Sum			800.00
	Berm	D8N Bulldozer	Hour	150.00	3	450.00
Total Open Pit Reclamation Cost						1,050.00
Rand Mine	Mob/Demob		Lump Sum			5,000.00
Total Mob/Demob Cost						5,000.00
Subtotal Reclamation Costs						376,245.00
Contingency at 10 percent						37,625.00
Administration at 5 percent						18,812.50
Total Reclamation Costs						432,682.50

2.3.9. Other Environmental Protection Measures

As part of RMC's proposed operations, a number of environmental protection measures, beyond those discussion under reclamation, would be implemented.

In the event that cultural or paleontological resources, not previously identified, are discovered during development and reclamation activities, operations in the vicinity of the discovered resources shall cease immediately and RMC shall notify the BLM of any resources discovered on federal lands and KCPD of any resources discovered on private land. The BLM and KCPD will, as appropriate, evaluate the significance of the site and determine the need for mitigation. Rand shall not proceed with potentially disturbing activities on federal land until authorized by the BLM and on private land until authorized by KCPD.

The USFWS has issued the Biological Opinion for the Rand Project as part of the BLM's Federal Endangered Species Act Section 7 consultation process with the USFWS (USFWS, 1993)(see Appendix K). As part of the Proposed Action, to minimize impacts to listed wildlife species, RMC has committed to comply with the terms, conditions and prescribed impact reduction measures contained in the Biological Opinion. Further, RMC would also implement the proposed specific recommendations and impact reduction measures to reduce inadvertent harm to desert tortoises and Mohave ground squirrel upon commencement of activity at the site as those identified for the Baltic Mine Project.

As part of the Proposed Action, RMC has committed to conduct reclamation activities on 37 acres of historic surface disturbance for which no party responsible for the reclamation now exists in the vicinity of the Rand Project area, probably in the Rand or El Paso Mountains, at a site or sites to be determined in consultation with the BLM. This reclamation would follow at least Level Two guidelines, as discussed in the Proposed Reclamation Plan portion of the Proposed Action. The areas to be reclaimed, and the specific activities to be undertaken as a part of the reclamation, would be subject to future regulatory and/or environmental review requirements, as necessary.

Monitoring of the heap leach fields for any signs of wildlife deaths, ponding of the cyanide solution and equipment malfunction would be conducted by RMC three (3) times per day (once per shift), seven days per week. If there are any wildlife, migratory bird, threatened and endangered species, bat, or RMC-unidentified animal mortalities, assumed to be do to cyanide toxicity, then RMC would notify the BLM. Any mechanical malfunction in the emitters, pipelines or other equipment would be repaired immediately. Should any ponding of the cyanide solution on the heap leach be found, the area would be repaired by reducing the number of emitters in the area (thereby reducing solution flow), or by removal of the emitters, scarification of the heap surface under the emitters and reinstallation of the emitters.

Polypropylene mesh exclusion netting would be installed over the barren, pregnant and storm water ponds. The netting would be secured with steel cables over and under the material, and fastened to cement anchors installed into the ground. Metal chain-link fencing would also be installed at the process facilities.

The entire project area would be fenced with 3-strand barbed wire approximately three (3) feet high, except a portion of BLM Route 85 which crosses the project area. The bottommost 1.5 feet of the fence would have 0.5-inch mesh hardware cloth. This mesh would be buried to a depth of 1 foot below ground level, or the bottom 1 foot would be bent at a right angle towards the outside of the fence, and covered with gravel and rocks to prevent animals from burrowing under the fence. The uppermost portion of the hardware cloth would extend not more than two (2) inches above the lowermost wire strand. T-posts or other suitable anchoring posts would be placed at appropriate intervals (usually 10 to 16 foot spacing).

RMC would consult with the BLM as to the construction of new BLM transportation routes to mitigate the loss of routes which would result from the fencing of the project area under the Proposed Action. It is expected that RMC would incorporate loop routes, rather than spur roads, as recommended in the BLM's Rand Mountains/Fremont Valley Management Plan. Loop routes would provide variety for off-highway vehicle (OHV) recreationists, are thought to

increase compliance with the route system and reduces the temptation for activities that are not consistent with the BLM management goals.

CHAPTER 3
ALTERNATIVES TO THE PROPOSED ACTION

3. ALTERNATIVES TO THE PROPOSED ACTION

This Chapter describes alternatives to the Proposed Action, including the No Action Alternative; features common to all alternatives; alternatives eliminated from detailed analysis; a description of the available resource opportunities resulting from the Proposed Action; and the Agency Preferred Alternative. Alternatives selected by the Lead Agencies for consideration in this EIS/EIR are based on potential impacts associated with the Proposed Action and issues identified through the scoping process.

Alternative designs and processes to the Proposed Action were developed through initial project scoping, consultation with other agencies and the public, and by Kern County and the BLM. These are required in the review of a proposal through the EIS/EIR process. Alternatives to be considered under NEPA and CEQA are those which could feasibly attain the Rand Project's basic objectives and are capable of either eliminating any of the significant adverse environmental effects of the Proposed Action or reducing them to a level of insignificance (even if such alternatives would be more costly or, to some degree, would impede the project's objectives). The range of alternatives is also guided by the "rule-of-reason." Alternatives are developed to satisfy an identified purpose or need, or in resolving issues presented as a result of the environmental review process. The EIS/EIR is required to explore and evaluate possible alternatives and, if an alternative is found to be infeasible or unreasonable and, thus, not considered further, the EIS/EIR must briefly explain the reasons for elimination.

The Rand Project is a proposal to extend existing operations at three (3) adjacent, approved, open-pit, heap-leach mine projects by mining additional gold and silver ore and waste rock at the current average operating rate of approximately 45,000 tons per day; continue the existing water use for an additional nine (9) to ten (10) years; construct facilities to process the additional ore and stockpile the additional waste rock; continue associated exploration activities; and continue implementation of wildlife impact reduction measures and reclamation activities. The purpose of RMC's Rand Project is to extend the operating life of the existing gold and silver open pit mining and heap leach operations on both public and private lands south of Randsburg, California. The objective of the Rand Project is to profitably mine ore, to process this ore to recover precious metals, and reclaim the project area.

3.1. No Action Alternative

The No Action (No Project) alternative forms the basis from which all impacts can be measured. Such action would generally not be consistent with the BLM multiple use mission and policy of making public lands available for a variety of uses, as long as these uses are conducted in an environmentally sound manner. The subject lands were not withdrawn for any special use and were open, unappropriated lands when unpatented mining claims were staked. If this alternative is implemented, activities in the project area would continue as described in Section 2.2, Previously Approved Operations. Surface disturbances that have been created by historic mining events but are proposed to be disturbed and reclaimed under the Rand Project would remain unreclaimed. Present uses in the area, which are limited predominately to mining, with grazing and recreation, would continue. The site would be available for future commercial gold processing proposals or for other proposals as permitted by BLM policy and/or County land use designations.

3.2. BLM Preferred Alternative/NEPA and CEQA Environmentally Superior Alternative

The BLM preferred alternative is the alternative which best fulfills the agency's statutory mission and responsibilities while giving consideration to economic, environmental, and technical concerns and other factors. The NEPA and CEQA environmentally superior alternative is the alternative that is determined to have the least adverse environmental effects, other than the No Action alternative. The Proposed Action, as presented above, consists of several related components which are combined to describe the action. The preferred and environmentally superior alternative consists of the Proposed Action and the proposed other environmental protection measures for the Proposed Action, as discussed in Section 2.3.9 of the EIS/EIR, as modified by the mitigation measures developed by the BLM and Kern County, as discussed in Chapter 6 of the EIS/EIR. The environmental consequences of the BLM preferred alternative and the NEPA and CEQA environmentally superior alternative are discussed in Chapter 7 of the EIS/EIR.

3.3. Alternatives Eliminated from Detailed Consideration

The EIS/EIR prepared as part of the approval process for the Baltic Mine Project analyzed a number of alternative mining and processing methods, gold processing techniques, and facility locations which were potentially applicable to the site-specific characteristics of the Baltic Mine Project area (USDI, 1992, page 2-48). These included: an underground mining alternative; an enlarged project alternative; a slower processing alternative; a faster processing alternative; a vat leaching alternative; a milling/leaching alternative; an in-situ leaching/carbon adsorption alternative; and a milling/flotation alternative. Since the type and grade of ore, type of waste rock, processing techniques, environmental setting and proposed impact reduction and reclamation techniques under the Rand Project Proposed Action are essentially identical to those under the Baltic Mine Project, as would be expected since the Baltic Mine Project area is a subset of the Rand Project area, the description of each of these alternatives in the Baltic EIS/EIR remains applicable for this Rand Project EIS/EIR as well. Therefore, this EIS/EIR incorporates by reference the description of these alternatives contained in the Baltic Mine Project EIS/EIR [State Clearinghouse Number 91052039] (USDI, 1992, page 2-48 through 2-65). The Baltic EIS/EIR is available for inspection at the BLM Ridgecrest office and the Kern County Department of Planning and Development Services. A summary of these descriptions from the Baltic EIS/EIR, as applicable to the Rand Project, follows.

The underground mining method develops structure-dependent deposits such as quartz veins, shear veins, and shear swarms. Development of underground deposits requires complex technical capabilities and engineering design which is expensive. Underground operations are extremely labor intensive. Processing methods normally employed utilize crush-mill operations, and recovery is by gravity separation, chemical leaching, or combinations of either. Cash costs associated with underground mining operations are about $60.00 to $70.00 per ton of mined ore. Most of the costs are associated with the higher labor associated with underground mining, higher operating costs, and higher capital costs per ton of ore mined. At $400.00 per ounce, a minimum minable grade of at least 0.15 ounces per ton must be mined. From the distribution of ore grade and tonnage for the Rand Project deposits, no ore is

present within the deposits that falls within the minable average for this deposit model. Therefore, underground mining is not possible, and it is not reasonable to expect the operator to consider this alternative.

The enlarged project alternative assumes that the deposit is capable of allowing more ore to be mined. Total surface disturbance would be about 2,000 acres. The rate of mining and processing would be the same as for the Proposed Action, resulting in a longer period of operation. The deposits are not capable of economically producing more ore than the feasibility study supporting the project indicates are present for the Proposed Action.

Under the slower processing alternative the total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be decreased by 50 percent, thereby increasing the life of the project. This would result in a slower rate of leach pad disturbance; however, at the end of the project life, the pads would occupy the same area as the Proposed Action. This alternative offers no environmental advantages over the proposed process for the Rand Project deposits because nearly the same area of land would be disturbed from pit operations and heap pad construction.

Under the faster processing alternative, the total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be increased by 50 percent, thereby decreasing the life of the project. This alternative offers no environmental advantages over the proposed process for the Rand Project deposits because nearly the same area of land would be disturbed from pit operations and heap pad construction.

The vat leaching process is somewhat similar to heap leaching, but is conducted in large, shallow tanks. It is an appropriate technique to employ with ores having rapid gold dissolution rates. Typically, the gold from such ores would be extracted in no more than three (3) days. It is also more capital intensive than heap leaching, requiring more surface facilities, particularly the additional investment in leach tanks. It produces the same amount of leached material as the heap leach process. Vat leaching operations would require that the deposit be mined as proposed, except that

the increased operating costs associated with vat leach processing would increase required ore grade, and decrease available ore by about 20 percent. Approximately 25 percent more waste would be moved to the waste rock storage area. This would result in an approximate five (5) percent increase in the amount of surface disturbance over that of the Proposed Action. Surface disturbance from mining operations would be the same. While there are no heap leach pads in this alternative, tailings from the vat leaching cycle would occupy a larger area than the heap leach pads. In addition, this system would require approximately 350 gpm water, 170 gpm more than for the heap leach proposal. This process is inappropriate for the Rand Project ores because of the slow dissolution rate inherent in the ore. Metallurgical testing of these deposits indicate leaching campaigns in excess of 200 days would be required to reach ultimate gold extraction levels. This alternative offers no environmental advantages over the proposed process for the Rand Project deposits since more area of land will be disturbed from pit operation and tailings disposal than under the Proposed Action. In addition, less revenue is generated. As such, this alternative is not a reasonable alternative to the Proposed Action.

The carbon-in-pulp (CIP) method of gold extraction requires high-energy consumption to grind crushed ore material to fine particle sizes that both liberate and expose the maximum mineral surface area. Due to the need for substantial grinding facilities and structures, this alternative process requires considerably more capital investment and would incur greater operating costs (due to higher energy requirements) than the heap leach process. A similar amount of land area is generally required. Moreover, the carbon-in-pulp leaching process produces wet tailings, so that additional capital investment would be needed to construct suitable tailings containment facilities and associated process equipment. Because of these considerations, carbon-in-pulp leaching is more appropriate for higher grade ore bodies in the range in excess of 0.08 ounces of gold per ton of rock. This higher grade of gold does not exist in quantities to justify a profitable mine at the Rand Project. This alternative offers no environmental advantages over the proposed process for the Rand Project deposits since nearly the same area of land would be disturbed from pit operations and tailings disposal. In addition, CIP facilities would need to be constructed in the project area in addition to proposed mine facilities and

waste disposal areas. As such, this alternative is not a reasonable alternative to the Proposed Action.

In-situ leaching involves the injection of leaching solution directly into an ore body while it is still in place in the ground. The gold-bearing solution is recovered by pumping from extraction wells, and processed by carbon adsorption. The method requires suitable geologic formations to confine the solution until it can be recovered. If the gold-bearing deposits are not defined between formations which would contain the leaching solutions, the potential for adverse effects to ground water and soils may be substantial. Many linear geologic structures, such as faults and shears, are located within the Rand Mountains, and they are pervasive within the Rand Project area. These structures could serve as conduits for solutions injected to leach the deposit to travel beyond the control of the operator. The risk of ground water and soil contamination by use of this method for the Rand Project deposits precludes its consideration as a viable and environmentally safe alternative.

The flotation method of gold extraction is used for ores containing appreciable quantities of sulfide minerals. The metallurgical tests have confirmed that the Rand Project ore is essentially sulfide-free. Consequently, for metallurgical reasons, flotation would not be suitable for this project.

All of these alternatives were eliminated from detailed consideration in the Baltic Mine Project EIS/EIR because they were determined, for the various reasons provided above, not to be reasonable alternatives. Because of all of the similarities between the Baltic Mine Project and the Rand Project discussed above, the assessment of all these alternatives, as not being reasonable alternatives to the Proposed Action, in the Baltic EIS/EIR remains valid for this Rand Project EIS/EIR as well. However, because the scope of the Rand Project Proposed Action is slightly different than the Baltic Mine Project, three (3) alternatives analyzed in the Baltic Mine Project EIS/EIR but rejected require additional review in this EIS/EIR: the location alternative; the reduced project alternative; and the backfilling alternative.

3.3.1. Facility Location Alternatives

3.3.1.1. Alternative Heap Leach Pad Location

The proposed location of the Lamont Valley and Descarga area heap leach pads were selected by RMC after consideration of several environmental and operational factors. These factors were: proximity to the open pits; efficiencies in the construction and operation of the heap leach facility, including a consolidated project layout; desire for gravity flow from the leach pads to the processing facility; avoidance of sensitive environmental resources; and community impacts.

Relocation of either or both of these heap leach pads from their proposed locations to other locations in the eastern or southern portion of the project area would increase the distance from the Yellow Aster open pit, which would contribute to higher costs, operational inefficiencies and increased haulage-related emissions. Locations in this portion of the project area would have higher potential to impact the desert tortoise and create a greater visibility impact because of the proximity to U.S. Highway 395 and Red Mountain. In addition, this area is the location of the "Baltic Channel", a potential auriferous placer resource (Taylor, 1993). Accordingly, there appears to be no environmental or operational advantage to be gained by relocating the leach pads to any other location within the project area.

Other alternative heap leach pad locations would be outside of the Rand Project area, to the north, east or south. All these locations would require the acquisition of additional lands and an increase in energy consumption and vehicle emission from the increase haulage distance. In addition, any locations to the north, east or south would require the construction of the facilities within desert tortoise critical habitat. Accordingly, there appears to be no environmental or operational advantage to be gained by relocating the leach pads to any location outside the project area.

3.3.1.2. Alternative Waste Rock Storage Areas

The major considerations in selecting locations for the waste rock stockpiles are: minimization of the truck haul distance and gradient from the open pit to the waste rock storage areas (and related costs); consolidation of mine facilities; adequate waste rock storage capacity; avoidance of sensitive environmental resources; and absence of economic mineral reserves or potential economic resources below the waste rock storage area.

Possible alternative locations for the waste rock storage exist both inside and outside of the project area. Disposal of the waste rock outside of the project area is undesirable because this would require the use of haul trucks outside the project area, increasing traffic and transportation costs, emissions and safety concerns, require land acquisition, and construction of the facilities would occur within desert tortoise critical habitat. Potential disposal of the waste rock at other locations within the project area, such as the area on the southeastern project boundary, were considered but eliminated because of potential impacts to the desert tortoise, which surveys indicated were likely more prevalent there than in other portions of the project area, and due to the possible location of additional economic gold reserves. This includes the area in the southeastern portion of the project area which is the location of the "Baltic Channel", a known auriferous placer resource (Taylor, 1993). Alternative locations in the Rand Project area were not considered reasonable because of the existing mining use of these areas.

3.3.1.3. Water Source Locations

RMC's planned source for the additional water necessary for the expansion associated with the Rand Project would be to increase pumpage from the existing RMC wells located in the Fremont Valley and transport the water to the project area via the existing pipeline.

Two (2) potential alternative water source locations which could be developed instead of the planned source, these being another source area in

the Fremont Valley or a location in the Cuddeback Lake area, have been evaluated and rejected as reasonable alternatives.

Developing an alternative water source in the Fremont Valley would require either the construction of a new well at a new location further from the existing wells, or require obtaining the use of an existing agricultural well, which generally have a capacity of 500 gpm or more, southwest of RMC's existing wells. Either scenario would require the construction of a new pipeline to transport the water to the project area. Both would result in additional activities and surface disturbance in an area of desert tortoise critical habitat, while the additional pumpage would continue to come from the Fremont Valley, the location of the existing and planned groundwater extraction. Acquiring the rights to the water from one (1) or more of the agricultural wells northeast of Koehn Lake in the Fremont Valley and producing this water for the Rand Project would also require the construction of a new pipeline to transport the water to the project area, and would also likely increase the potential for poorer quality water to move from the Koehn Lake area towards the RCWD wells. Because of the disturbance to the tortoise critical habitat and the continued production from the Fremont Valley, this alternative was not considered a potentially environmentally superior alternative and, therefore, was eliminated from further detailed consideration.

Developing an alternative water source in the Cuddeback Lake area would require the construction of a new well, or wells, or obtaining the use of an existing well or wells, to supply the additional water necessary for the expansion associated with the Rand Project. The Cuddeback Lake area is not considered a reliable source for this quantity of groundwater because of the limited production from the existing wells (Krieger and Stewart, 1978; Neste, Brudin & Stone, 1971; The Mark Group, 1987), and it is possible that the water resources may not be sufficient for the Rand Project. Investigations undertaken on behalf of the Rand Communities Water District reported that obtaining water from the Golden Valley/Cuddeback Lake area was not likely since "the supply is limited as evidenced by low and intermittent production

from wells" (Krieger and Stewart, 1978). Use of either new or existing wells in the Cuddeback Lake area would require the construction of a new pipeline, up to ten (10) miles in length, to transport the water to the project area. This would result in additional activities and substantial surface disturbance in an area of desert tortoise critical habitat designated by the USFWS. Because of the disturbance to the desert tortoise critical habitat and the reported limited groundwater potential, this alternative was not considered a potentially viable or environmentally superior alternative and, therefore, was eliminated from further detailed consideration.

3.3.2. Reduced Project Alternative

Under this alternative, the total tons of ore and waste rock to be mined would be decreased from that proposed as the Proposed Action. The scale of the project would fall somewhere between the No Action alternative (which is a continuation of the existing and previously approved mining operations) and the Proposed Action, depending on the actual amount of reduction in the project scope. The environmental consequences of these two (2) alternatives (the Proposed Action and the No Action alternative) are addressed in Chapter 5 of this EIS/EIR.

The smallest reduced project alternative would likely be restricting the project to the expansion of existing facilities only. This would include the expansion of the Descarga heap leach pad and the expansion of the West Valley waste rock stockpile. However, since the Descarga heap leach pad expansion under the Rand Project is planned to only accommodate an additional six (6) million tons of ore, only that amount of ore, and an equally small amount of waste rock, could be removed, most likely from the Yellow Aster pit. No additional ore (or waste rock) could be removed from the Baltic or Lamont pits, as there would be no facilities to process the ore or stockpile the waste rock. Because the six (6) million tons of ore is such a small fraction (10 percent) of the 60 million tons of ore proposed to be mined under the Proposed Action, this "alternative" project is not appreciably different from the No Action alternative, and is, thus, not considered an independently reasonable alternative.

The next smallest reduced project potentially feasible alternative would be to restrict the Rand Project to the full expansion of only one (1) of the three (3) pits, and the accompanying construction of the necessary heap leach pad and waste rock stockpile capacity. Most logically, this could be the complete mining of the Yellow Aster pit (52 acres of new surface disturbance); completion of the expansion of the West Valley waste rock stockpile (64 acres of new surface disturbance); and the construction of the necessary heap leach pad areas and processing plant in the Lamont Valley (possibly an additional 75 acres of new surface disturbance), plus some smaller additional areas for the topsoil stockpile, the haul roads, and other uses (10 acres). This would result in a project almost identical to the Baltic Mine Project in features, operation, size (201 acres of new surface disturbance vs. 200 acres for the Baltic Mine Project), and, because of the almost identical environmental setting, environmental impacts. This is also likely to be the smallest size expansion for the Rand Project which would be economically reasonable, given the grade of the ore.

As stated above, alternatives to be considered under NEPA and CEQA are those which could feasibly attain the Project's basic objectives and are capable of either eliminating any of the significant adverse environmental effects of the Proposed Action or reducing them to a level of insignificance. Thus, because of this potential alternative's similarities to the Baltic Mine Project, a reduced project of the size described above is probably economically reasonable. However, the Baltic Mine Project was determined to result in significant impacts to topography, water consumption and visual character of the area, and there is every reason to believe that both the Proposed Action and the reduced size project will also result in significant impacts to these resources. Since this reduced size project equivalent to the Baltic Mine Project would not likely eliminate or reduce to insignificance these probably significant impacts of the Proposed Action, and since this is the smallest sized project which is probably economically reasonable, there are no reduced size alternative projects which can be considered reasonable alternatives to the Proposed Action under NEPA or CEQA.

3.3.3. Backfilling Alternatives

The Proposed Action proposes the permanent disposal of waste rock and ore from the expanded mining operations to surface waste rock stockpiles and pads. An alternative to this permanent surface disposal would be to backfill the waste material to the open pits. This operation could reduce some of the long-term visual, biological and land use effects of the Proposed Action, however, this could also increase some of the long-term mineral resource effects. The actual mechanics of a backfilling operation is dependent on the specifics of the type of ore body, the mining method, and the physical characteristics of the area. Backfilling of a previously mined area is typically used at strip mines, where the mineral (frequently coal) exists in relatively well-defined horizontal or semi-horizontal zones or layers. Waste rock can be removed from one area and immediately deposited in an adjacent mined area which contains no residual mineral potential, thereby minimizing costly double handling of the waste material. The geometric relationship between ore and waste rock in strip mines generally favors placing overburden material into the shallow cuts of areas previously mined. Backfilling of conical, open pit mines is more constrained by the logistics of the mining operation and physical characteristics of the materials mined. For example, these open pit mines cannot be backfilled until all of the material has been mined out. However, two (2) types of backfilling methods are evaluated below as potential reasonable alternatives to the Proposed Action for the Rand Project; maximum backfilling and sequential backfilling.

3.3.3.1. Introduction

Open pits, such as the three (3) proposed for expansion under the Rand Project Proposed Action, are not generally amenable to backfilling, from both operational and economic standpoints. Surface storage of the waste rock material would first be required, increasing the area of surface disturbance. Placement of material back into the pit after completion of mining would increase operational and capital costs, increase energy consumption, and adversely affect air quality by increasing combustion and fugitive dust emissions. The increased costs of complete or partial backfilling of the

material removed from a pit could render the commercial open pit mining operation economically noncommercial. However, the environmental advantages of backfilling are that it reduces the long-term visual contrast of the project and allows the pit area to be used for activities not otherwise possible without backfilling.

An additional consideration in evaluating the relative merits of backfilling is the conservation of mineral resources and energy. Complete or partial backfilling could be in conflict with objectives of federal and state mining statutes, if additional minerals could be extracted from the pit in the future. SMARA states that "...the reclamation of mined lands ... will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed land" (Section 2711[b]). The protection of remaining mineralization at a reclaimed mine site is also incorporated into federal regulations, such that "reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization" (43 CFR Part 3809.05[j]).

3.3.3.2. Project Constraints on Backfilling

Mineralization and Potential Reserves

The potential loss of additional mineral reserves, and the technical and economic constrains of backfilling for open pit mining, as discussed above, are applicable to the Rand Project. Maps of the three (3) Rand Project pits with cross sections showing the disseminated precious metal mineralization are provided in Figure 3-1, Figure 3-2, and Figure 3-3. The pit designs are the optimal possible based on the current geological, engineering and economic data. The configurations of the open pits are designed using a number of factors, including: grade of the mined material; precious metal recovery rates; precious metal prices; mining costs; processing costs; pit wall slope stability; and physical and legal boundary constraints. Based on systematic evaluation of these factors, the current pit designs would allow for the extraction of approximately 60 million additional tons of ore.

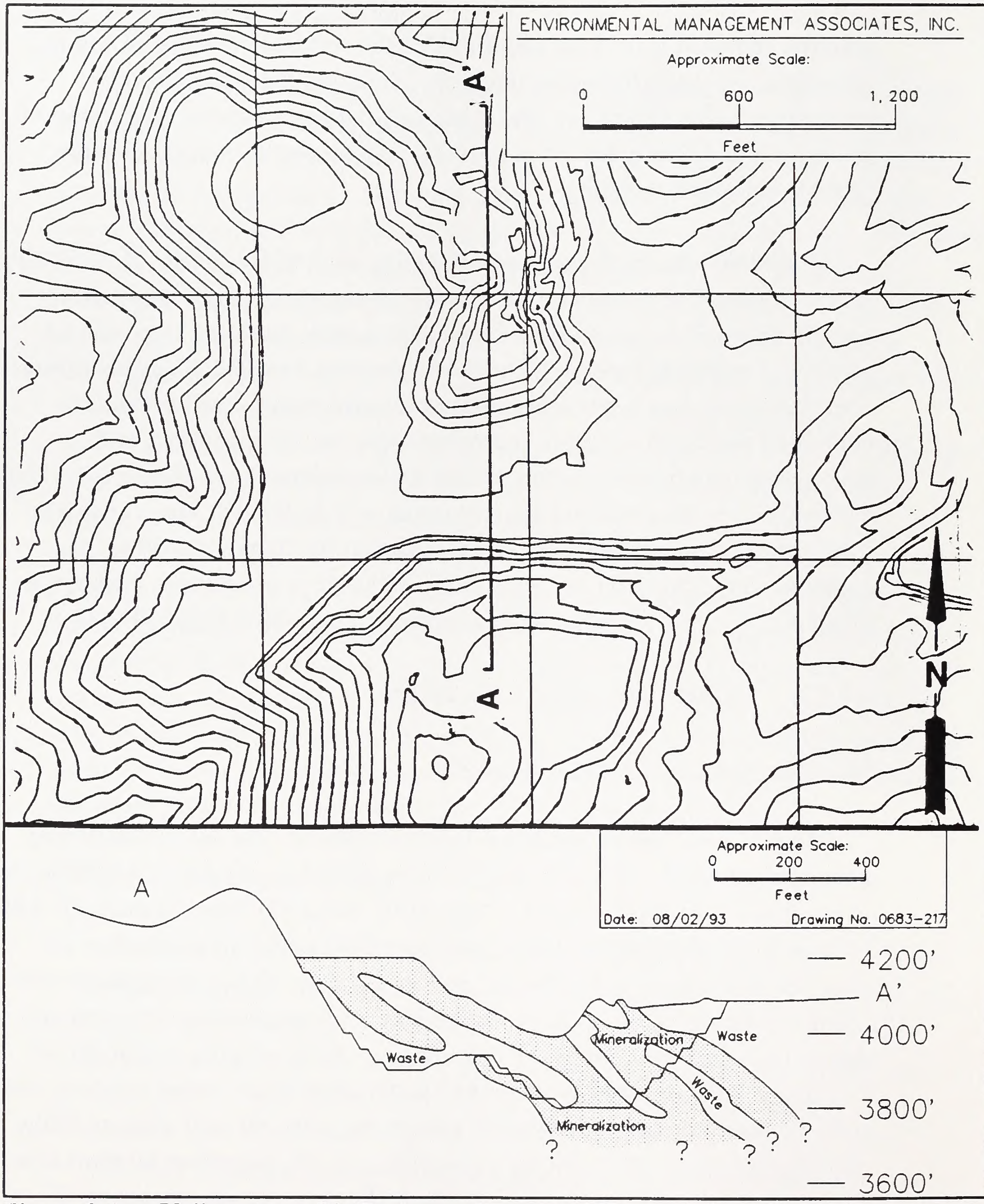


Figure 3-1: Yellow Aster Pit Design and Areas of Known Mineralization

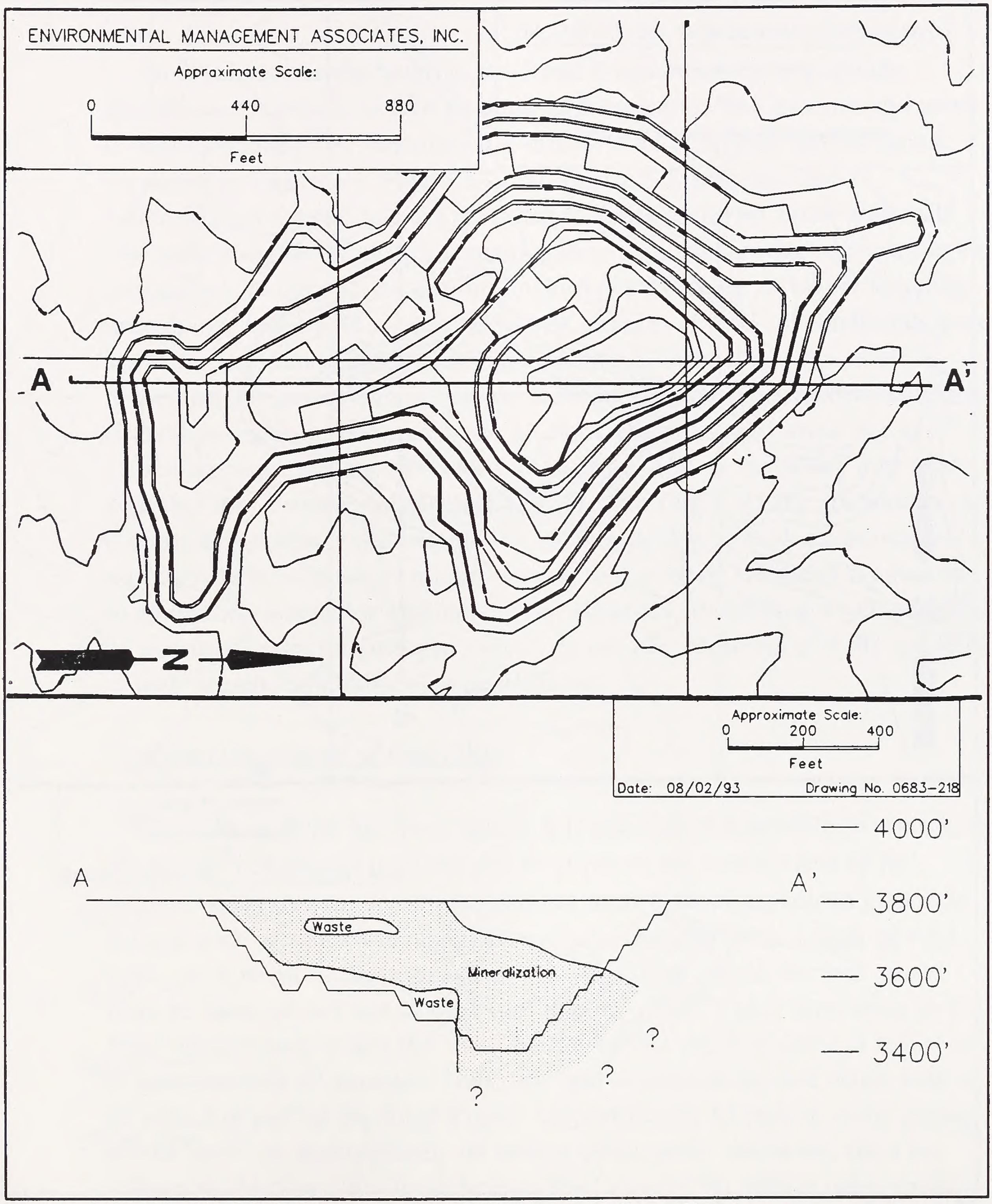


Figure 3-2: Baltic Pit Design and Areas of Known Mineralization

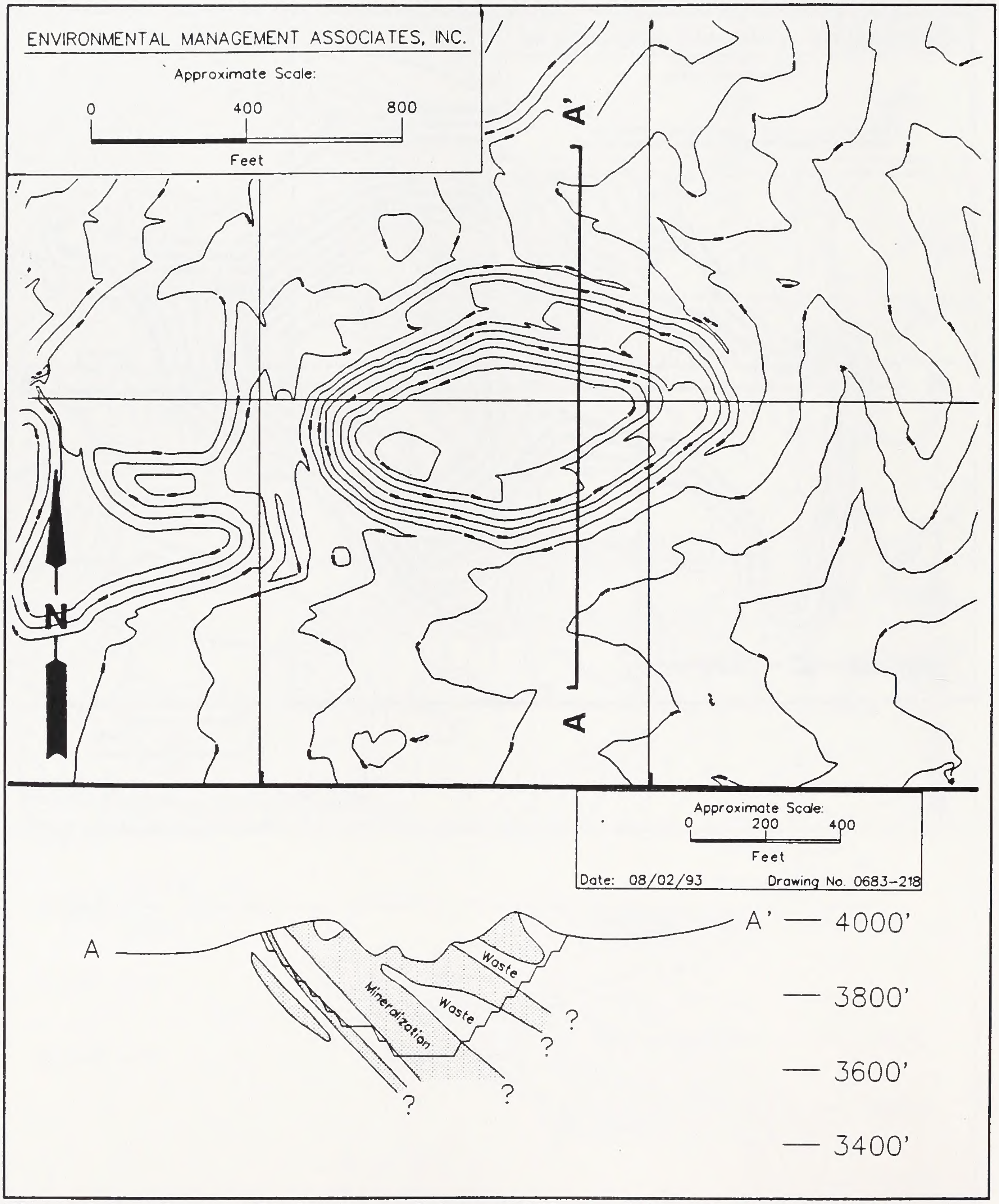


Figure 3-3: Lamont Pit Design and Areas of Known Mineralization

Gold mineralization found in the Rand Project deposits is generally disseminated, sometimes with no physical demarcation between ore and waste. In such circumstances, the mineral is mined to an economic "cut-off" grade. As shown in Figure 3-1, Figure 3-2, and Figure 3-3, precious metal mineralization extends beyond the planned limits of the pit floors and walls. The walls and floor of the pit contain gold mineralization which appears to be uneconomic to mine at the current price of gold, because of higher stripping ratio and/or lower gold grades. However, changes in external conditions, such as fluctuating metals prices and improvements in technology, can result in revised pit designs which increase the amount of economically extractable ore. If these materials left behind in the pit floor and walls are buried due to backfilling requirements, the cost of recovering them in the future may be so high that they become entirely lost as a resource (NRC, 1979). In addition to the loss of potentially recoverable ore, geologists rely on rock exposures, especially with evidence of mineralization, as a primary source of information to guide their search for additional mineralization. Backfilling would preclude or seriously hamper a geologist's ability to use the information in the pit walls in their search for additional mineralization.

Technical Constraints of Backfilling

Once an open pit has been mined, it is generally not possible to replace all the material excavated from the pit, or to return the land surface to its original configuration, due to the physical constraints of the mined materials. Broken rock occupies a much greater volume than the same weight of solid rock. As a result of this expansion, or "swell factor", all of the rock mined from an open pit will not fit back into that pit. RMC's past experience in the Rand Project area is that the "swell factor" for the ore and waste in this area is approximately 30 percent. Thus, the total volume of ore and waste rock to be mined as part of the Rand Project (approximately 61 million cubic yards) would "swell" to approximately 80 million cubic yards. However, since the volume of the three (3) pits to be backfilled exceeds 80 million cubic yards

(since the Rand Project only enlarges existing pits), this "swell factor" is not an issue for the Rand Project.

Economic Constraints on Backfilling

In contrast to the reclamation of strip mining operations, the cost of reclamation for most open pit metal mines greatly exceeds the value of the reclaimed land. Some of the highest reclamation costs can be generated by assuming the backfilling to original contour; on the order of $55 million to $3.2 billion for individual metal mines (NRC, 1979). Assuming a cost of $0.80 per ton (USDI, 1990a) for backfilling the mined material, the total cost for backfilling as part of the Rand Project could be in excess of $105 million. RMC has indicated that this would make the Rand Project no longer economically feasible. This conclusion is supported by an analysis for the backfilling of the Castle Mountain Mine, another open pit gold mine located in San Bernardino County, California having similar characteristics, with the exception that the grade of the ore was greater than that at the Rand Project, presumably allowing the Castle Mountain Mine project a greater ability to support the cost of backfilling. This analysis indicated that the project would have a negative net present value when the cost of backfilling was included (USDI, 1990a).

An additional report, prepared by the Bureau of Mines, Western Field Operations Center, utilized a generic cost model which used a 0.055 ounce per short ton (oz/st) grade, a 2:1 strip ratio, 2,500-foot average haul distance, 75 percent gold recovery, and 65 percent backfill. Backfilling costs were estimated at $0.84/st in 1990 dollars for ore and waste, plus a 25 percent mark-up to allow for contractor's costs, for a total cost of $1.05/st. A cash flow analysis was then performed which used a $400/oz gold price and 15 percent rate-of-return compared to net present value. The results indicated that backfilling would render an otherwise profitable operation unprofitable. It should be noted that the gold grade used in this analysis is roughly twice the grade of the Rand Project, which would make the Rand Project even more

uneconomical, although RMC's strip ratio is slightly lower than that assumed by the generic cost model.

3.3.3.3. Maximum Pit Backfilling

This alternative would provide for the project to fill the open pits to the greatest degree possible with material mined under the Rand Project activities. This would essentially be a large earth moving project which would commence following the approximate nine (9) to ten (10) year operational period of the Rand Project. Rock that had been removed from the open pits during mining would be reloaded into trucks and returned to the pits. It is assumed that backfill material would include all the waste rock and spent ore mined as part of the Proposed Action, but not include materials mined by previously permitted operations. Assuming that the Yellow Aster, Baltic, and Lamont pits were refilled, approximately 80 million cubic yards of materials would be moved back to the pits. The backfilling project would result in the continued disturbance of approximately 500 acres as a result of continued operations at the waste rock stockpiles, open pits, and heap leach facilities. In addition, there would be continued consumption of the water, electricity and fuel, as well as continued emissions of dust and other pollutants from internal combustion engines, beyond the end of activities under the Proposed Action. Additional solid waste, such as tires, oils, filters, etc., would also be generated. However, backfilling of the pits would not likely significantly reduce the visual impact of the Rand Project area as a whole, as the pits are located in the upper reaches of the Rand Mountains and, as such, are not visible from U.S. Highway 395, the principal visual observation point for the Rand Project, and all existing waste rock stockpiles and heaps would not be reduced in this backfilling process.

Based upon these considerations, the potential loss of natural resources and economic disadvantages of maximum pit backfilling appear to be substantially greater than the potential environmental advantages. Replacement of the overburden in the mined-out pits would require several years of an economically unproductive activity and energy use, with related

environmental impacts that would not otherwise occur. The economic burden of backfilling would place an unreasonable restriction on the statutory right of the federal claimant to remove mineral resources. This alternative would also promote the loss of potentially minable precious metal resources. This potential loss of mineral resources would also possibly generate a "taking" under the U.S. Constitution for the loss of a property right of the mineral claimant. As such, this alternative is judged to be not a reasonable alternative to the Proposed Action.

3.3.3.4. Sequential Pit Backfilling

This alternative would provide for the backfilling of the Rand Project open pits with waste rock during the operational life of the Proposed Action. Waste rock from one pit would be deposited in another pit that had completed mining activities. The material would be deposited in the pit using an end-dump method from the pit rim. This alternative would allow for as much material as possible to be backfilled during the operational life of the project, reduce the size of the waste rock stockpiles, and minimize impacts to wildlife habitat as much as possible. This sequential backfilling would be completed concurrent with mining operations.

If this method of backfilling were used, the Baltic open pit would likely receive waste rock from the Lamont open pit after the Baltic open pit had reached the end of economic mining. The amount of waste rock from the Lamont open pit would refill approximately 50 percent of the Baltic open pit. This amount of waste rock used to backfill the Baltic pit would proportionally reduce the height of the Lamont Valley waste rock stockpile and reduce the amount of surface disturbance in the Baltic open pit reclaimed to Level One and correspondingly increase the surface disturbance reclaimed at Level Two. The Lamont and Yellow Aster pits would likely not be backfilled.

During project operations under the sequential backfilling alternative, some waste rock stockpiles and all the heap leach piles would still be constructed as permanent surface disposal sites as they are planned under the

Proposed Action. This would result in a minor reduction of the overall visual impact of the Proposed Action. In addition, since the Baltic and Lamont open pits are located in the upper reaches of the Rand Mountains, they are not visible from U.S. Highway 395, and backfilling either or both of these pits would have very little effect in reducing the visual impacts. In addition, because of the relatively low grade and unit value of the Rand Project ores, project viability is dependent upon minimizing the capital cost of project facilities (such as mine trucks and other equipment), maintaining a high mining rate, and maintaining a highly flexible mining plan which simultaneously develops all three (3) known orebodies. The proposed mine plan shifts equipment from pit to pit as required for mining and waste rock removal, and blasting, ore removal, or waste rock stripping may occur at any pit at any time. Because of these factors, simultaneous development of all three (3) pits is required, and sequential mining, with backfilling of previously mined pits, would not be economically or logistically feasible.

Temporary storage of waste rock would cause a substantial temporary disturbance to the waste rock storage site's soils and vegetation which would not be completely mitigated by simply removing the waste rock. Although the topography could be restored to a near original condition, not all waste rock could be removed by large earth moving equipment, and revegetation would still be required. Based upon these considerations, it is expected that the potential loss of mineral resources are greater than potential minor visual impact advantages of this potential alternative to the Proposed Action. As such, this alternative is judged not to be a reasonable alternative to the Proposed Action.

CHAPTER 4
AFFECTED ENVIRONMENT

4. AFFECTED ENVIRONMENT

4.1. Mineral Resources

The northeastern Rand Mountains were prospected as early as the 1860s; however, it was not until 1893 that gold was actually discovered in the region in the El Paso Mountains, approximately 15 miles to the north and west of the Rand Mining District (Clark, 1970). The original Yellow Aster Mine was located in 1895 by Frederic Mooers, Charles Burcham and John Singleton and operated until approximately 1942. The location of the Yellow Aster Mine, as well as other historic mines in the area, are shown on Figure 4-1. Subsequent to the start of mining operations in the Rand Mining District, the Stringer Mining District was created from the south and eastern portions of the Rand Mining District. Gold producing operations within this district included the Baltic and others (Halleran and Swope, 1987). Examination of the Baltic properties for silver followed the discovery of silver to the east, at the Kelly Mine, in 1919. The Baltic property was closed in 1925 after producing approximately 2,500 ounces of gold. The operation was idle by the 1930s, although the tailings were reworked sometime prior to 1962.

Removal of federal control over gold prices in 1972 triggered renewed interest in previously mined gold properties. The Randsburg area was investigated by various individuals and companies. In 1984, a drilling program to explore the Baltic area was implemented. Extensive exploration of the project area resulted in the delineation of a large, low-grade ore body that could be developed using open pit mining and heap leach recovery techniques. The development of an open pit mine and heap leach facility was proposed by Echo Bay Mines in 1987. The project was not fully permitted and no development activities were undertaken by Echo Bay Mines. RMC was also conducting exploration activities in this same area. RMC initiated activities in the Randsburg area in 1984 by acquiring the Yellow Aster Mine and developing a pilot test facility in the Descarga area. The Lamont Mine commenced operations in 1986, followed by the Yellow Aster Mine in 1989. RMC acquired the Baltic Mine Project in 1990 from Echo Bay Mines and proceeded with the permitting of a slightly modified version of the plan proposed by Echo Bay Mines. The Baltic Mine Project began operations in 1993. Since that time, exploration activities conducted by RMC

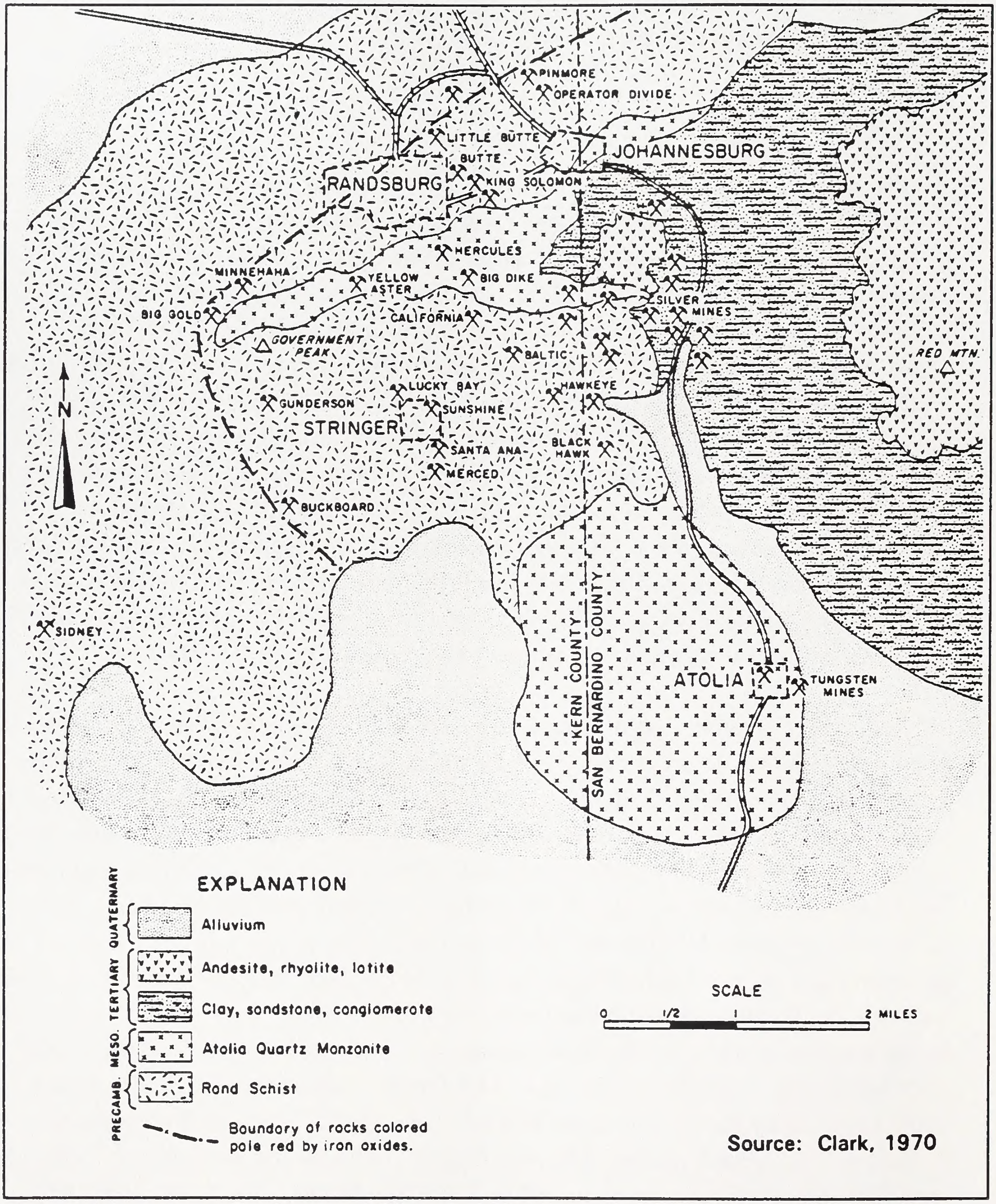


Figure 4-1: Area Geology and Historic Mine Location Map

have resulted in the delineation of additional ore reserves. These new reserves are present mostly within and adjacent to the Yellow Aster open pit area, but are also present within and adjacent to the Baltic and Lamont open pits. One (1) additional satellite orebody is also present to the west of the Lamont open pit, as shown on Figure 2-5.

4.2. Physiography and Geology

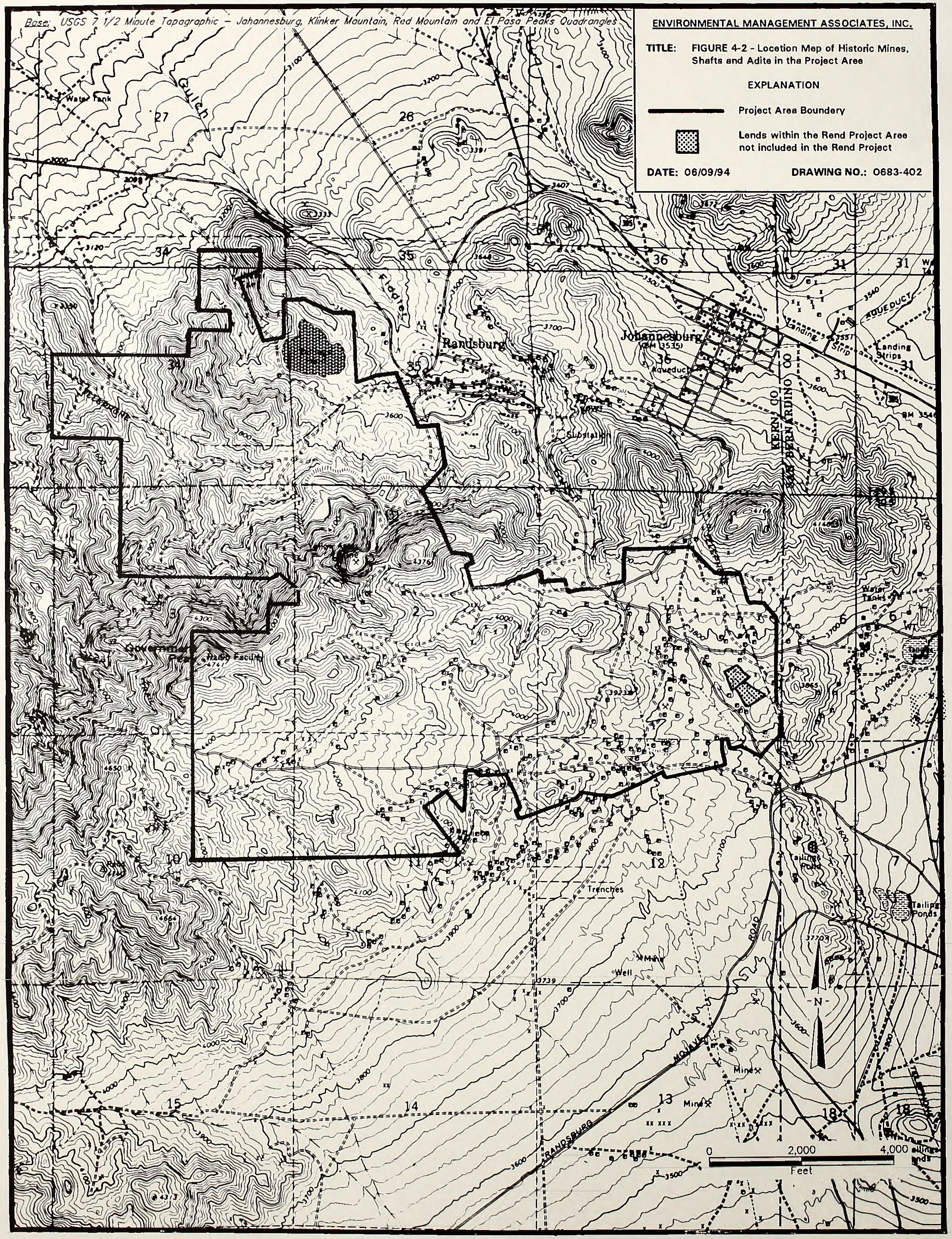
4.2.1. Physiography

The topography of the northeast portion of the Rand Mountains is rugged to rolling. Elevations range from 1,900 feet AMSL in Fremont Valley west of the project area to 4,741 feet AMSL at Government Peak on the western boundary of the project area. Topography of the project area consists of roughly east-west trending ridges with intervening valleys. The elevation of the project area varies from 3,300 feet AMSL in the northern portion of the project area to 4,741 feet AMSL at Government Peak.

Existing surface disturbance within the project area that pre-dates RMC includes the original Yellow Aster and Baltic Mines, as well as many other shafts, trenches, dumps, open stopes, adits and other facilities, which are best shown on the 1967 topographic map of the area (Figure 4-2). Approximately 761 acres of surface disturbance are associated with RMC's previously approved operations within the Rand Project area, as outlined in Section 2.2.

4.2.2. Geology

The project is located in southeast California within the Mojave Desert Geomorphic Province of the Basin and Range Physiographic Province (Norris and Webb, 1976). The northeast portion of the Rand Mountains consists largely of the Atolia Quartz Monzonite of Mesozoic age and the Rand Schist of Precambrian Age (Figure 4-1) (see Appendix D for the Geologic Time Scale). These units have been intruded or covered by Tertiary age volcanic rocks of andesitic, latitic and rhyolitic composition (Clark, 1970). Subsequently, clays,


Base: USGS 7 1/2 Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles
ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-2 - Location Map of Historic Mines, Shafts and Adits in the Project Area
EXPLANATION
Project Area Boundary
Lands within the Rand Project Area not included in the Rand Project
DATE: 06/09/94
DRAWING NO.: 0683-402
Randsburg
Johannesburg
Substation
Aqueduct
Landing Strip
Landing Strips
KERN CO
SAN BERNARDINO CO
Water Tanks
Tailings Ponds
Trenches
Well
Mine
Radio Facility
RANDSBURG
MOJAVE
ROAD
N
0
2,000
4,000
Feet

sandstones and conglomerates of the Paleocene Epoch mantled the older units at lower elevations on the east side of the project area. Quaternary alluvium has been deposited in the major valleys north and south of the project area (Figure 4-1).

The project is located in a structurally complex area. The Garlock Fault Zone is approximately six (6) miles northwest of the project area and the San Andreas Fault Zone is approximately 61 miles to the southwest (Figure 4-3). These two (2) faults have historic (<200 years) movement. Other regional faults are present in the area surrounding the project area and show movement during the Holocene Epoch (Leonoff, 1989). Geologic relationships in the mines in the Randsburg area indicate that faults which control mineralization are believed to be Tertiary in age and of a different structural orientation than the active Holocene faults. There is no evidence of post-Tertiary movement on the ore-related structures and the Holocene faults which do show active movement are located outside the boundaries of the project area.

The project area is within a county-designated seismic hazard IV area. Seismicity in the vicinity of the project area is moderate. A seismic hazard analysis of the area was prepared for the Baltic Mine Project in 1992 (Van Alstine, 1992). Table 4-4 identifies the faults on which an earthquake could potentially occur, their distance from the project area, their possible maximum magnitude and the maximum probable peak acceleration. The 100-year maximum probable earthquake which could most significantly affect the project area would be a magnitude 7.0 earthquake on the Garlock Fault, with a probable peak acceleration (ground shaking) in the project area of approximately 0.35 gravity (Van Alstine, 1992).

Monitoring for ground shaking from blasting at RMC's existing operations at the Yellow Aster and Baltic Mines are routinely conducted. A VME (Vibration Monitoring Equipment Co.) Blasting Seismograph is used to take individual measurements of particle velocities. Locations in the town of Randsburg are used to monitor the Yellow Aster blasts and locations in Red Mountain

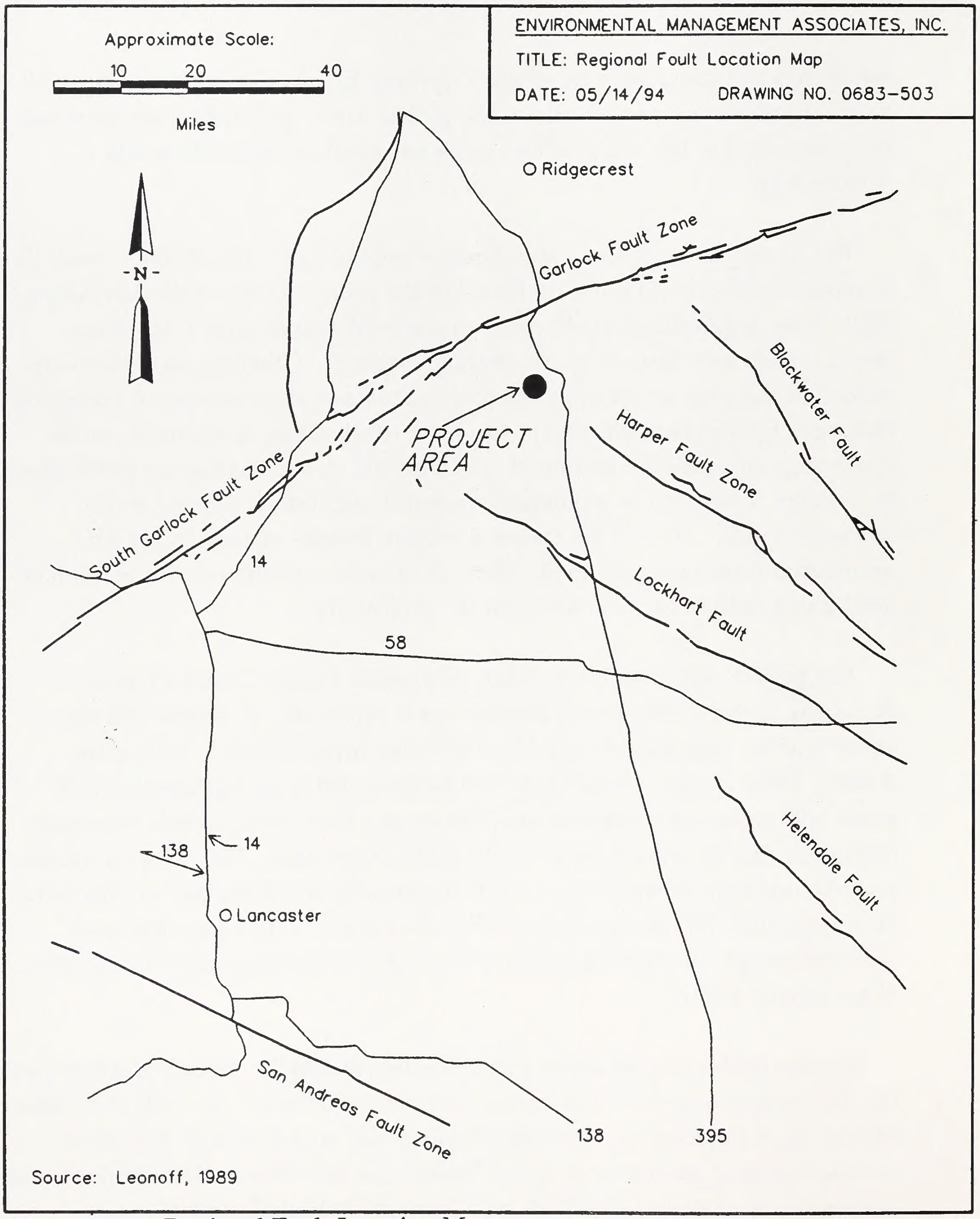


Figure 4-3: Regional Fault Location Map

are used to monitor the Baltic blasts. The measured particle velocities never exceeded 0.1 inches per second (USDI, 1992).

Table 4-4: Summary of Probable Seismic Event Characteristics

FAULT	DISTANCEFROM PRO ECT AREA(miles)	MAXIMUMPROBABLE EARTHQUAKE[1]	MAXIMUMPROBABLE PEAK ACCELERATION[2]
Harper	4	5.75	0.198
Garlock (east)	9	7.00	0.348
Garlock (west)	9	6.00	0.259
Lockhart	12	6.00	0.121
Blackwater	13	5.75	0.099
Sierra Nevada	22	6.00	0.096
San Andreas (Mojave)	61	8.25	0.111

Source: Van Alstine, 1992
[1] - Richter Scale as measured at the epicenter.
[2] - Measurements in gravity acceleration.

Analyses of materials at the Rand Project for naturally occurring radioactive materials (NORM) has not been conducted. However, some analyses from the general area for radon gas and uranium and thorium in soils have been conducted and can be used as an indication of the relative amount of NORM in the area. In 1990 the California Department of Health Services (DHS) conducted an initial phase survey of approximately 2,858 homes, where short-term radon detectors were placed in randomly selected homes (DHS, 1990). One sample was collected from the Randsburg area, the results of which indicated a radon isotope-222 level of 1.8 pico curies per liter (pCi/l) of air. This value is significant below the EPA recommend level of 4.0 pCi/l at which action should be taken to reduce radon levels.

Within approximately 15 miles of the project area approximately 70 soil samples were collected as part of the national uranium resource evaluation (NURE) (Hoffman, et al, 1991). The uranium values from these soil samples range from 0.5 to 5.5 ppm, and average 1.6 ppm. The average crustal abundance

of uranium is 2.5 ppm (Rose, et al, 1979). The thorium values from the same soil samples range from 2.0 to 28.0 ppm, and average 7.6 ppm. The average crustal abundance of thorium is 10 ppm. In the immediate vicinity of the project area, three (3) samples were collected. The uranium values from these three (3) soil samples range from 1.6 to 3.2 ppm, and average 2.3 ppm. The thorium values from the three (3) soil samples range from 10.0 to 17.0 ppm, and average 12.6 ppm. Using the radon value in comparison to the EPA recommended action level, and the uranium and thorium values in comparison to the average crustal abundance of those elements, the project area and vicinity does not appear to have elevated levels of radioactive elements and, therefore, elevated NORM levels would not likely be expected within the project area.

4.3. Soils

A soil inventory of the 2,520-acre project area was conducted in January, 1993 (Alexander, 1993; Appendix C). The inventory identified and mapped the various soil series present in the project area, discussed the suitability of the topsoil material for reclamation activities, and contained management recommendations for reclamation/revegetation activities in the area. Approximately 761 acres of surface disturbance currently exist as part of RMC's previously approved operations within the Rand Project area. From this disturbance approximately 130,000 cubic yards of topsoil have been stockpiled at various locations within the project area. The dominant soil map units identified from the mapping are generally representative of relic paleosoils which formed under moist conditions, as compared to the arid conditions of the current climate. Selected characteristics of the soil map units found are shown in Table 2-13. Approximately 50 percent of the soils in the undisturbed portion of the project area have surface horizons of between three (3) and six (6) inches, and a total soil depth of between ten (10) and 20 inches, and approximately 40 percent of the soils in the undisturbed portion of the project area have surface horizons of between six (6) and nine (9) inches, and a total soil depth of between 20 and 40 inches.

4.4. Hydrology

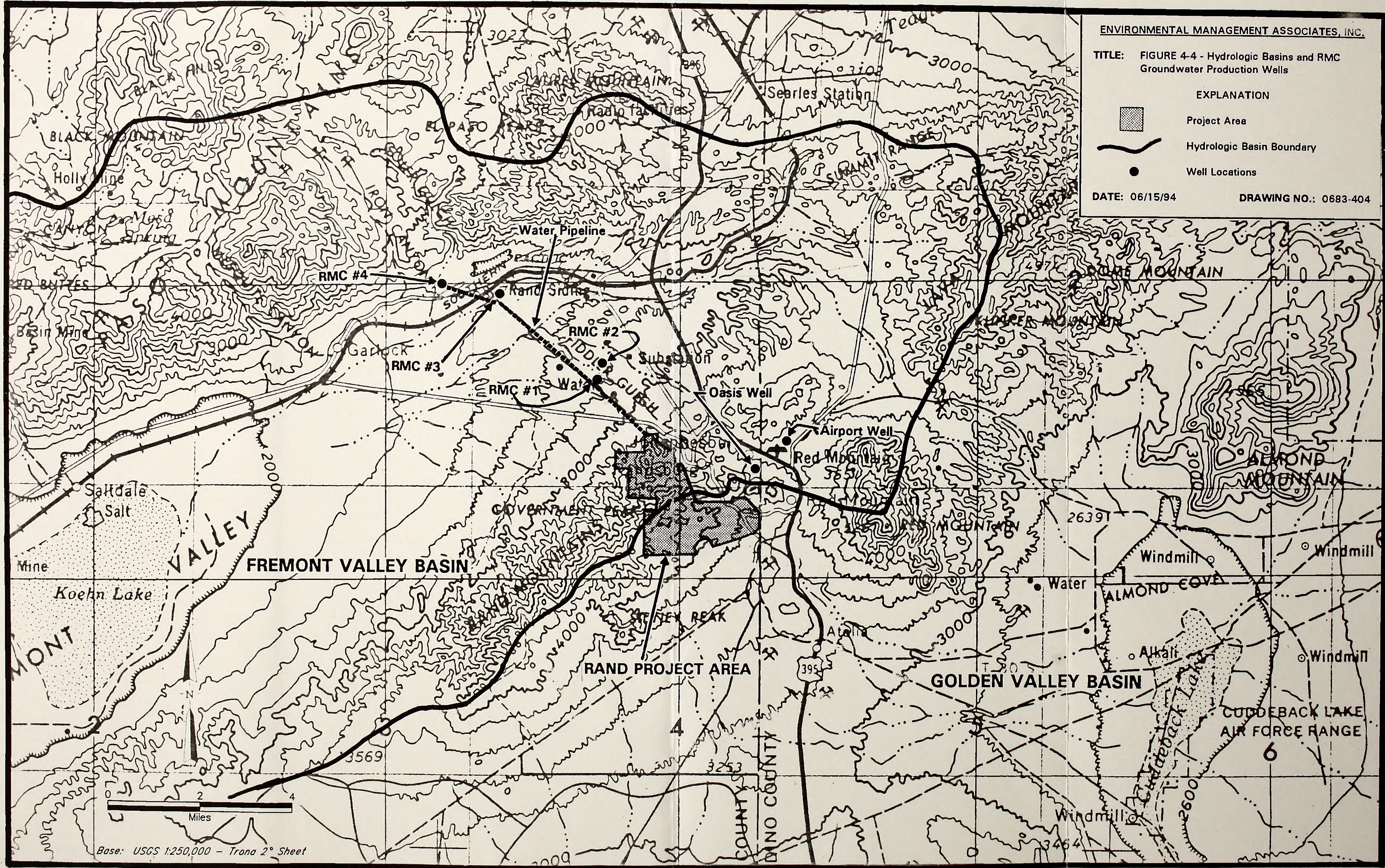
4.4.1. Surface Water

4.4.1.1. Surface Flows

Drainages in the northeastern portion of the Rand Mountains are ephemeral, with creeks and drainages mainly fed by precipitation from winter storms and summer thunderstorms. Hydrographic basin boundaries are shown on Figure 4-4. The project area is located in the Golden Valley Basin and the Fremont Valley Basin. The calculated 100-year/24-hour storm event in the area is approximately 3.5 inches of precipitation (Leonoff, 1989). Surface flows from precipitation events flow through the project area and are routed around certain process components (Figure 2-4). Within the 2,520-acre project area, approximately 925 acres are currently within areas of internal drainage. These areas are the Yellow Aster, Descarga, Lamont and Baltic heap leach facilities, the Lamont and Baltic open pits, and the areas up surface water gradient of the Lamont and Baltic open pits. No site-specific information on the quantity of the surface flows is available. No springs or seeps are located in the project area.

4.4.1.2. Water Quality

The surface water quality is affected by the natural conditions of the area, as well as the ongoing mining operations and development activities. A sample of surface stormwater runoff which originated from within the project area, but which was collected just southeast of the project area, had a naturally occurring background arsenic level of 0.58 parts per million (ppm) (USDI, 1992). RMC has sampled and analyzed materials mined from the ongoing operations to assess the potential for those materials to affect surface water quality. A complete discussion of the materials and sample analyses are presented in Section 2.2.3.3; however, a brief summary of the discussion follows.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-4 - Hydrologic Basins and RMC Groundwater Production Wells
EXPLANATION
Project Area
Hydrologic Basin Boundary
Well Locations
DATE: 06/15/94
DRAWING NO.: 0683-404
Water Pipeline
RMC #4
RMC #3
RMC #2
RMC #1
Rand Siding
Substation
Oasis Well
Airport Well
Red Mountain
Searles Station
Radio facilities
Garlock
Saltdale
Salt
Koehn Lake
FREMONT VALLEY BASIN
RAND PROJECT AREA
GOLDEN VALLEY BASIN
CUDDEBACK LAKE AIR FORCE RANGE
ALMOND MOUNTAIN
ALMOND COVE
Windmill
Water
Alkali
Atolia
Basin Mine
Holly Mine
Mine
Miles
Base: USGS 1:250,000 - Trona 2° Sheet

The difference between the acid potential and the neutralization potential is the net neutralization potential, which is expressed in units of tons of calcium carbonate per thousand tons of material. To assess the net neutralization potential, the material which would become waste rock was analyzed and the total sulfur content was used to determine acid generating potential. The neutralization potential was determined by direct titration. In theory, a sample could be expected to generate acidic solutions at some point in time if the net neutralization potential is less than zero. However, actual experience has shown that net neutralization potential values between -20 and 20 may be able to generate acidic solutions (SRK, et al, 1989).

All materials sampled for the Rand Project have an excess basicity and, therefore, have a low acid generating potential. The STLC-deionized water analyses of the waste rock and ore-grade materials for the Rand Project were below the STLC values. There was no significant difference between the STLC values obtained for the leached ore-grade material and the fresh ore-grade material. Therefore, the data for the fresh ore-grade material can be used as representative of the potential leachate which might be generated for the spent ore waste.

4.4.2. Groundwater

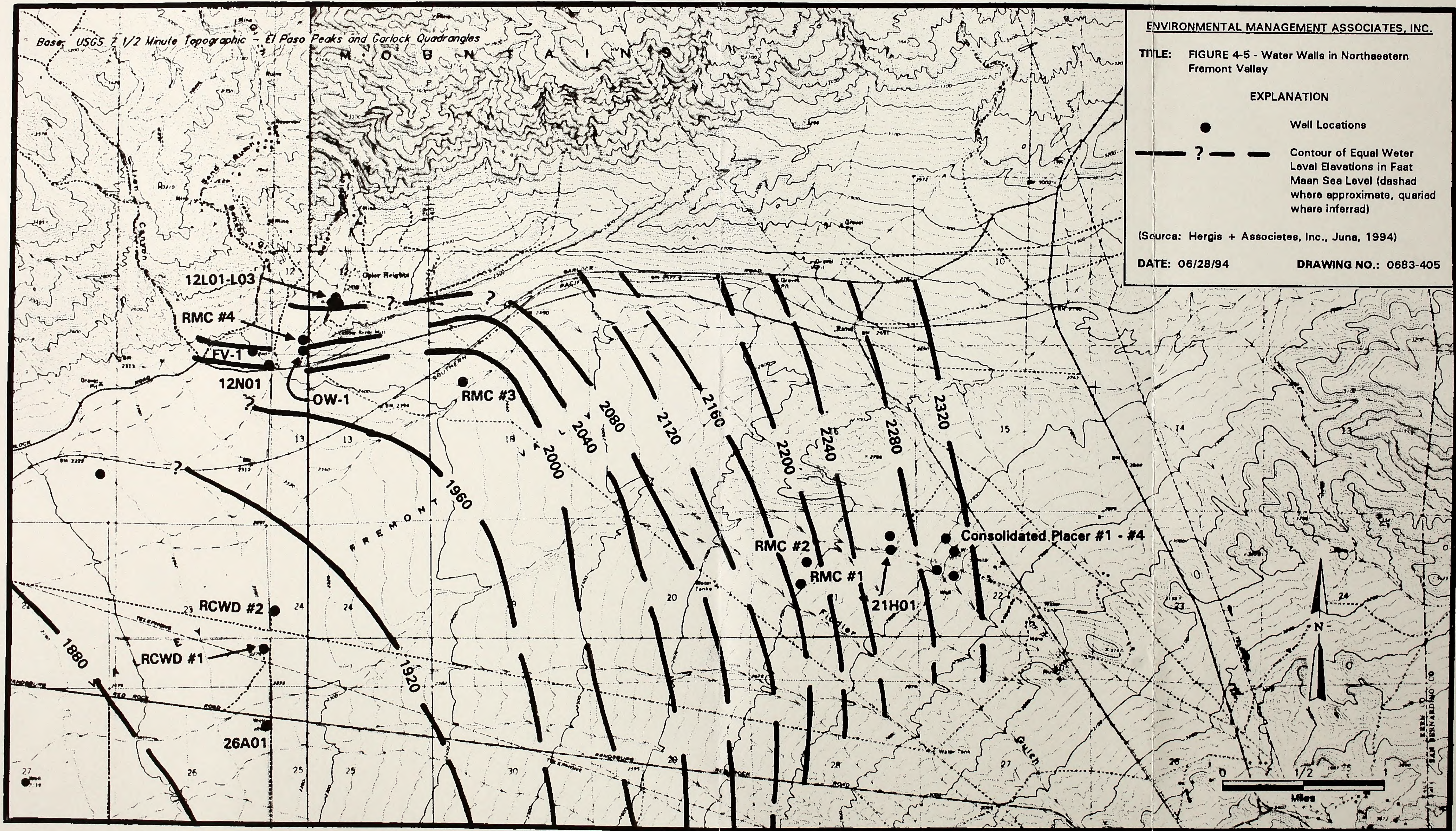
As previously stated, the project is located within the eastern portion of the Fremont Valley Basin and the northwestern portion of the Golden Valley Basin. Within the mining portion of the project area, mineral exploration drilling by RMC has encountered groundwater only at great depths: 1,440 feet below original surface and 640 feet below the proposed pit floor in the Yellow Aster pit and 640 feet below original ground surface and 200 feet below the proposed pit floor in the Baltic pit. Drilling to depths greater than 700 feet below original ground surface have not encountered groundwater below the Lamont pit. This is primarily because the portion of the project area where mining and processing operations occur is a topographically uplifted area comprised of igneous and metamorphic bedrock, whereas the region's dominant groundwater resources exist in adjacent valleys which contain thick alluvial deposits.

Existing groundwater supply wells for the Rand Project are located in the northeastern portion of the Fremont Valley, northeast of Koehn Lake, and northwest of the project area (Figure 4-5 and Figure 2 of Appendix E). No domestic water wells are located within or adjacent to the mining and processing portion of the project area. The water wells nearest the mining and processing operations are the Oasis and Airport wells located approximately one (1) mile northeast of the Baltic heap leach pad (Figure 4-4). The Oasis well currently does not produce water, while the Airport well currently produces approximately ten (10) gpm for 24 hours every two (2) weeks for irrigation purposes (Friel, 1994). All other nearby wells are located in the Fremont Valley, approximately six (6) miles northwest of the mining and processing operations. Well depths and water table elevations for these wells are provided in Table 4-5.

Table 4-5: Information on Selected Fremont Valley Water Wells

WELL NAME	DATE DRILLED	LOCATION	WELL DEPTH	PRODUCTION IN GPM	WATERTABLE DEPTH (DATE)	WATER ELEVATION
Oasis Well	1987	SW¼SW¼31/T29S/R41E	880'	NP[2]	267 (04/94)	NK
Airport Well	1987	NW¼NE¼31/T29S/R41E	800'	14	700 (04/94)	NK
CPD-1	NK[1]	NW¼NW¼22/T29S/R40E	800'	40	509 (09/93)	2311
CPD-2	NK	NW¼NW¼22/T29S/R40E	860'	70	548 (09/93)	2234
CPD-3	1942	SW¼NW¼22/T29S/R40E	860'	NP (94)	396 (01/42)	2444
CPD-4	1990	SW¼NW¼21/T29S/R40E	1,100'	117	573 (09/93)	2227
Boral Well	NK	SE¼NE¼21/T29S/R40E	860'	35	560 (10/92)	2220
RMC #1	NK	NW¼SW¼21/T29S/R40E	838'	10	523 (05/94)	2161
RMC #2	1987	NW¼SW¼21/T29S/R40E	800'	40	527 (05/94)	2157
RMC #3	1990	NW¼NW¼18/T29S/R40E	770'	100	453 (05/94)	1970
RMC #4	1990	SW¼SW¼12/T29S/R39E	1,045'	500	326 (05/94)	2095
RCWD-1	1954	SE¼SE¼23/T29S/R39E	600'	100	375 (04/94)	1905
RCWD-2	1979	NW¼SW¼24/T29S/R39E	800'	100	375 (04/94)	1905
28H01	NK	NE¼SE¼28/T29S/R39E	600'	1,000	240 (02/94)	1860
29M01	NK	NW¼SW¼29/T29S/R39E	265'	800	69 (02/67)	1911
29N01	1942	SW¼SW¼29/T29S/R39E	165'	350	66 (02/58)	1914
32C01	1949	NE¼NW¼32/T29S/R39E	NK	1,164	79 (02/58)	1911
33H01	1956	SE¼NE¼33/T29S/R39E	460'	1,100	180 (08/78)	1915
3C01	1956	NW¼NW¼ 3/T30S/R39E	610'	1,600	240 (08/78)	1920

1 NK = Not Known
2 NP = Not Producing; number in parentheses is last known production from well.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-5 - Water Wells in Northeastern Fremont Valley
EXPLANATION
Well Locations
Contour of Equal Water Level Elevations in Feet Mean Sea Level (dashed where approximate, queried where inferred)
(Source: Hergis + Associates, Inc., June, 1994)
DATE: 06/28/94
DRAWING NO.: 0683-405
Base: USGS 7 1/2 Minute Topographic - El Paso Peaks and Garlock Quadrangles
M O U N T A I N S
FREMONT
12L01-L03
RMC #4
FV-1
12N01
OW-1
RMC #3
RMC #2
RMC #1
21H01
Consolidated Placer #1 - #4
RCWD #2
RCWD #1
26A01
1880
1920
1960
2000
2040
2080
2120
2160
2200
2240
2280
2320
N
0
1/2
Miles

The Fremont Valley is a 200-square mile, northeast-southwest trending, structurally-controlled valley to the west and north of the project area. The valley is bounded on the southeast by the Rand Mountains, on the northwest by the El Paso Mountains, and on the northeast by a set of low hills. The elevation of the valley floor varies from 1,900 feet AMSL at Koehn Lake to approximately 3,300 feet AMSL on the alluvial fans adjoining the bordering mountain ranges. Groundwater storage capacity in 1976 for the entire Fremont Valley was estimated at 4.8 million acre-feet, and groundwater storage above the 500-foot depth (below the 500-foot depth is considered uneconomical for agriculture), excluding the saline water under Koehn Lake, was about two (2) million acre-feet (Guerrero, 1994). The U.S. Geological Survey (USGS) has estimated the groundwater recharge southwest of Koehn Lake at 9,500 acre-feet per year from precipitation, runoff from the surrounding mountains and underflow from the southwest (Koehler, 1977). The area lying northeast of Koehn Lake, in the northeast portion of Fremont Valley, does not receive any recharge from underflow and receives only a small quantity from stream runoff (Koehler, 1977).

Two (2) water districts produce groundwater from the Fremont Valley: the Rand Communities Water District (RCWD), produces from an area northeast of Koehn Lake, in the northeastern portion of the valley; and the Antelope Valley-East Kern Water Agency, producing from the southwestern portion of the valley (Figure 1 of Appendix E). The districts are separated by Koehn Lake, which is an ephemeral lake or playa. Groundwater use in Fremont Valley is predominantly from agricultural users southwest and, to a lesser degree, immediately northeast of Koehn Lake. Water use from the aquifers northeast of Koehn Lake also includes the existing RMC wells, the RCWD wells, and other mineral development operation wells to the southeast of the RMC wells. Table 4-5 lists selected water wells in the Fremont Valley northeast of Koehn Lake, as well as available information on their construction and use (also see Figure 4-5).

Wells drilled southwest of Koehn Lake typically yield 1,500 gpm, while wells drilled northeast of Koehn Lake generally yield between 300 and 1,000 gpm

(Broadbent, 1989). Measurements of the depth to groundwater during the last four (4) years in the northeastern portion of the Fremont Valley range from 240 to 560 feet below ground surface (bgs). Static water levels measured in well RMC #4 and the RCWD wells during May, 1994 ranged from approximately 325 to 375 feet bgs (Hargis + Associates, 1994). The groundwater gradient in the northeastern portion of the Fremont Valley is variable due to variation in aquifer characteristics, but in general is to the southwest at approximately 0.03 foot per foot (Hargis + Associates, 1994).

RMC currently pumps an annual average of approximately 400 gpm (605,000 gpd), from their wells for use in heap leaching and dust control at their Yellow Aster, Baltic, Lamont and Descarga facilities. During hot summer months, when water consumption is highest, production increases to an average of 580 gpm. In cool winter months, production falls to as low as 220 gpm. As water consumption would be expected to decrease beginning in fiscal year 1997, these existing RMC operations would be expected to consume an average of approximately 190 gpm for the remaining 6-year mine life. RMC's standard pumping procedure is to pump well RMC #4 20 hours per day, 365 days per year. This is periodically supplemented by wells RMC #1 and RMC #2 at approximately ten (10) gpm each and well RMC #3 at 100 gpm.

The two (2) RCWD wells, located approximately two (2) miles south of well RMC #4, pump at approximately 100 gpm for ten (10) hours per day (60,000 gpd) (Hargis + Associates, 1994). The RCWD operates only one (1) well at a time, alternating wells on a monthly basis. The RCWD wells are completed with screened intervals from 300 to 547 feet bgs and from 450 to 590 feet bgs in wells RCWD-1 and RCWD-2, respectively. The pump for RCWD-2 is set at approximately 450 feet bgs (Hambrick, 1994). It is assumed that the pump in RCWD-1 is also set at 450 feet bgs.

As many as six (6) agricultural irrigation wells are also presently producing groundwater. As shown in Table 4-5, these wells together produce an average of 5,000 gpm (7,200,000 gpd) (Hargis + Associates, 1994). The potential recharge of the agricultural irrigation is 16 percent of the total pumpage by the six (6)

wells. Other wells produce lesser quantities of groundwater for mineral/industrial purposes. The well located in the NE¼ of Section 21, Township 29 South, Range 40 East, MDB&M, is intermittently used by Boral Resources for their asphalt plant; the well produces approximately 21 gpm (30,000 gpd). The four (4) wells located in the northeastern portion of the Fremont Valley in the NW¼ of Section 22, Township 29 South, Range 40 East, MDB&M are used by Consolidated Placer Dredging for their placer mining operation, which is expected to continue to operate until 1999; three (3) of the four (4) wells produce a total average of approximately 150 gpm (216,000 gpd). The potential recharge of water from the CPD operations is 75 percent of the total pumpage by their three (3) wells. Therefore, CPD operations have a net potential groundwater usage of approximately 37.5 gpm. All other wells shown on Figure 4-5 have intermittent, minor production (Hargis + Associates, 1994).

Over the period 1958 to 1976, groundwater levels in the aquifers in the southwestern portion of Fremont Valley fell a maximum of 240 feet due to the large use of groundwater for agricultural activities (Koehler, 1977). The northeast part of the Fremont Valley is not utilized as extensively for agriculture, and historical water level data has shown lower rates of water table decline (Koehler, 1977). Limited data from northeastern Fremont Valley wells indicates water table declines in the vicinity of well RCWD-1 of approximately 30 feet over 30 years, or approximately 1.0 foot per year between 1953 and 1976. After 1979, well RCWD-1 continued to decline at a rate of 1.0 foot per year, while well RCWD-2 declined at a rate of 3.0 feet per year (Hargis + Associates, 1994).

Hydrologic modeling of the northeastern Fremont Valley was recently performed to evaluate the impacts of RMC groundwater withdrawals, along with the valley's additional groundwater wells, on the northeastern Fremont Valley aquifer in general, and the RCWD wells in particular (Hargis + Associates, 1994). Field investigations conducted for the modeling included water level measurements and groundwater sample collection in June, 1993; drilling, constructing and developing a 1,007-foot deep observation well in May, 1994; and performing a 12-hour constant discharge aquifer test of well RMC #4. The modeling was performed on 6-year, 12-year and 16-year time periods using a

MODFLOW numerical model. Four (4) case scenarios were deployed in the modeling: Case 1 evaluated the effects of the existing RMC groundwater production, from well RMC #4 pumping alone, and assumed RMC pumpage ceased after six (6) years (this case did not include regional pumpage); Case 2 evaluated the effects of the proposed Rand Project groundwater withdrawals for a 16-year period, and also did not include regional pumpage; Case 3 evaluated the effects of the existing well RMC #4 production without the increased pumpage due to the Rand Project for six (6) years, in conjunction with regional pumpage continuing for 16 years; and Case 4 evaluated the effects of the Rand Project and regional pumpage over a 16-year period. Cases 1 and 3 are described in the following paragraphs concerning the affected environment; Case 2 is described more thoroughly in the environmental consequences discussion in Chapter 5; and Case 4 is described under the cumulative impacts discussion in Chapter 9. The results of the modeling for Cases 1 and 3 are provided in Table 4-6.

Table 4-6: Results of Northern Fremont Valley Groundwater Modeling - Case 1 and Case 3

Model Run[1]	Drawdown in the vicinity of RMC #4 (feet)			Drawdown in the vicinity of RCWD Wells (feet)		
	6 yr	12 yr	16 yr	6 yr	12 yr	16 yr
Case 1 - Current RMC Production alone	2.8	0.5	0.2	1.3	0.5	0.3
Case 3 - Current RMC production with regional wells	21.9	35.0	41.7	23.5	38.3	44.4

[1] Hargis & Associates, Inc., June, 1994

The water table decline in the vicinity of the well RMC #4, based on the Case 1 groundwater withdrawals (current RMC water production alone) after six (6) years, was predicted to be 2.8 feet. The impact under Case 1 in the vicinity of the RCWD wells after six (6) years was predicted to be 1.3 feet; 0.3 feet of decline from current RMC pumpage was predicted in the vicinity of the RCWD wells after 16 years. Less than one (1) foot of drawdown was calculated in the vicinity of the remaining modeled wells in the northern Fremont Valley due to the existing RMC water withdrawal rates (Case 1). Modeling Case 3 (which is Case 1, current RMC production, plus all other current regional

groundwater production), indicated that, under current conditions (which would have RMC ceasing groundwater production in six (6) years), drawdown in the vicinity of well RMC #4 would be 41.7 feet after 16 years, while in the vicinity of the RCWD wells drawdown would be 44.4 feet after 16 years. As can be seen by comparing the results of Case 1 and Case 3, this is due mostly to current pumpage from the valley's other existing wells. At the end of 16 years, 4.4 feet and 51.8 feet of drawdown was calculated under Case 3 in the vicinity of the Consolidated Placer Dredging (CPD) (projected to operate for a 5-year period ending in 1999) and the agricultural wells, respectively (Hargis + Associates, 1994).

Because the static water level is approximately 70 feet above the pumps in the RCWD wells (Hambrick, 1994), the current rate of water table decline from groundwater pumpage in the northeast Fremont Valley will not likely impact the production from these wells in the short to intermediate term.

Chemical data on the quality of groundwater in the northeastern Fremont Valley is limited, but indicates that three (3) types of groundwater are present: a magnesium-sulfate type water and a sodium-magnesium-sulfate type water in the portion of the aquifer north of the Garlock fault; a sodium-sulfate type water and a sodium-bicarbonate type water in the central portion of the area; and a sodium-chloride type water and a sodium-sulfate type water in the southwestern portion of the area (Hargis + Associates, 1994). Groundwater with high concentrations of dissolved solids is present but generally limited to shallow groundwater in the area of Koehn Lake. Measurements of dissolved solids from these high salinity waters are on the order of 50,000 to 100,000 ppm (Koehler, 1977). Better quality groundwater, with lower concentrations of dissolved solids, is present below the lower quality groundwater in the area of Koehn Lake, as well as to the northeast and southwest of Koehn Lake. Measurements of dissolved solids from these waters are on the order of 500 to 1,000 ppm (Koehler, 1977). There appear to be several aquifers, which are probably separated by impermeable clay lenses that generally separate the lower and higher quality groundwater (Koehler, 1977).

Water samples from well RMC #4 indicate a sodium-sulfate type groundwater with 910 mg/l TDS (Hargis + Associates, 1994). Trace concentrations of iron, lead, zinc, tetrachloroethylene (PCE) and 1,1,1 trichloroethane (1,1,1,-TCA) were also detected in the sample from well RMC #4. The iron, lead and zinc are all below their respective state and federal Maximum Concentration Levels (MCLs). The PCE and 1,1,1-TCA may be associated with cleaning of the well equipment before installation (Hargis + Associates, 1994). These values were also below their respective state and federal MCLs. Water samples from well RCWD-2 indicate a sodium-bicarbonate type groundwater with a TDS of 490 mg/l, which is slightly below the MCL of 500 mg/l. All other values were also below their respective MCLs.

4.5. Air Resources

4.5.1. Meteorology

Weather data collected from 1960 to 1989 in China Lake, located approximately 25 miles north of the project area, and from 1937 to 1980 in Randsburg, are summarized in Table Table 4-7. The climate is characterized by hot, dry summers and mild, dry winters with local variations due to elevation and slope aspects. Temperature extremes can vary up to approximately 30°F throughout the year from the warmest average maximum temperature to the coldest average minimum daily temperature. Winters are cool with temperatures in the 50s during the day and dropping into the 30s or less at night. Summer temperatures can rise into the 100s during the day, approximately 66 days per year, and drop into the 60s at night. Because temperature is affected by elevation, the temperatures taken at China Lake generally would be higher than actual temperatures around the project area, which is approximately 1,600 feet higher in elevation than China Lake. Annual average rainfall in China Lake is 4.28 inches and in Randsburg is 5.66 inches. The maximum recorded rainfall event in China Lake was 2.18 inches. Snowfall in the area would average approximately one (1) to two (2) days per year, with an average measurable snow depth of one (1) inch per occurrence.

Table 4-7: Available Weather Data from Ridgecrest and Randsburg

PERIOD	AVERAGE TEMPERATURE (°F)[1]			RAIN (inches)	
	Minimum	Mean	Maximum	China Lake[1]	Randsburg[2]
January	0.0	43.3	77.0	0.71	1.08
February	9.0	49.3	88.0	[illegible]	1.12
March	17.0	54.7	92.0	0.50	0.72
April	28.0	61.4	102.0	0.15	0.32
May	[illegible]	70.5	107.0	0.12	1.08
June	40.0	79.7	115.0	0.05	0.21
July	50.0	85.6	113.0	0.23	0.10
August	[illegible]	84.0	113.0	0.31	0.22
September	[illegible]	76.2	113.0	0.25	0.26
October	21.0	64.7	103.0	0.17	0.21
November	15.0	52.0	89.0	0.50	0.56
December	2.0	43.2	89.0	0.50	[illegible]
Mean Annual	47.4	63.7	80.1	4.28	5.66

1 China Lake data from BLM, 1992
2 Randsburg data from USDI, 1992

Weather information from China Lake, approximately 25 miles north of the project area, was used to describe the wind speed and direction in the project area. Based on a 30-year average for the period from 1960 to 1989, the average wind direction in China Lake is 209 degrees and the wind speed is 5.7 knots (BLM, 1992). In China Lake the strongest surface winds occur in late winter and spring as cold fronts move through the area. Strong surface winds with a prevailing speed of 15 knots or greater can be expected 15 days per year, and strong gusts of 40 knots or more can be expected ten (10) days per year. Dust devils can occasionally occur due to the rapid heating of the ground surface, producing winds up to 30 knots in the vicinity of the phenomenon. However, because wind tends to increase in speed and follow mountain ranges, these speeds and directions may not be representative of the project area.

4.5.2. Air Quality

Both ambient air quality and the emission of air pollutants are regulated under federal and California laws and regulations. Ambient air quality standards have been established for seven (7) "criteria" pollutants. Several of these "criteria" pollutants are sometimes emitted by precious metal mining operations or created by chemical reactions in the air from pollutants emitted from precious metal mining operations. Table 4-8 lists these ambient air quality standards.

Table 4-8: Air Quality Standards and Data

POLLUTANT	STANDARDS		MONITORING STATION[a]		
	California	Federal	Trona[b]	China Lake[c]	Mojave[d]
Ozone (ppm)	1 hour: 0.09	1 hour: 0.12	High: 0.09 (0.10) Second High: 0.09 (0.10)	-	High: 0.13 Second High: 0.12
NO_2 (ppm)	1 hour: 0.25	-	High: 0.05 (0.36) Second High: 0.04 (0.06)	-	High: 0.07 Second High: 0.07
	-	Annual Average: 0.053	0.006 (0.009)[e]	-	0.11[e]
SO_2 (ppm)	1 hour: 0.25	-	High: 0.01 (0.03) Second High: 0.01 (0.02)	-	-
	24 hour: 0.04	24-hour: 0.14	High: 0.010 (0.010)[f] Second High:0.010 (0.010)[f]	-	-
	-	Annual Average: 0.03	0.002 (0.002)[e]	-	-
PM_{10} ($\mu g/m^3$)	24-hour: 50	24-hour: 150	High: 79 (56)[f]	High: 50[f]	High: 43[f,g]
	Annual Geometric Mean: 30	-	36.0 (22.2)[f]	20.6[f]	16.9[f,g]
	-	Annual Arithmetic Mean: 50	40.2 (25.7)[f]	23.0[f]	20.8[f,g]
TSP ($\mu g/m^3$)	-	-	42.9 (43.4)[h]	25.3[h,i]	-

[a] Unless otherwise noted, data is for 1993
[b] Two (2) monitoring stations were in operation in Trona in 1993: Market St. and Athol (opened 1/93). Data in parenthesis are from the Athol Monitoring Station.
[c] China Lake Monitoring Station monitors particulate pollutants only.
[d] Two (2) monitoring stations were in operation in Mojave in 1993. Unless otherwise noted, data is from the Mojave Desert AQMD operated Poole Street Monitoring Station.
[e] Annual Mean - All Hours
[f] 24-Hour Mean
[g] Mojave Desert - Airport Station (ARB Operated)
[h] Annual Geometric Mean
[i] Data is for 1989.

Source: California Air Resources Board, 1994.

The project area is located within a portion of the Southeast Desert Air Basin which is under the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). This portion of the basin is designated as an "unclassified" area for PM_{10} (particulate matter less than ten (10) microns in size) and a non-attainment area for ozone under federal standards (Flynn, 1994). Under California standards, the area is considered a non-attainment area for both ozone and PM_{10} (Flynn, 1994). The portion of San Bernardino County which borders the southeast portion of the project area is classified as a "moderate non-attainment area" for PM_{10} under the federal standard and is unclassified under the state standard (De Salvio, 1994). In addition, the southern boundary of the Searles Valley Planning Area (SVPA) is located approximately 8 to 10 miles north of the project area (SVPA PM_{10} SIP, 1991). This area is classified as non-attainment for PM_{10} under both state and federal standards and is classified as a "moderate non-attainment" area for ozone under the state standard. However, the air quality of the project area is generally good due to the limited population of the area, the absence of concentrated industrial activity, and the lack of natural emission sources.

The nearest ongoing monitoring station for atmospheric pollutants is in Trona, California, approximately 30 miles north of the project area (California Air Resources Board, 1989). Air quality data collected from the Trona station, as well as TSP (total suspended particulates) and PM_{10} data collected from other stations, are presented in Table 4-8. As shown on Table 4-8, TSP levels in the region vary greatly. High winds and the adjacent dry lake beds in Trona may account in part for the high PM_{10} and TSP levels experienced at that monitoring station.

PM_{10} is the main pollutant of concern since high winds or increased surface disturbance can elevate PM_{10}/TSP concentrations. Principal existing sources of PM_{10}/TSP in and around the project area are vehicular traffic on unpaved roads and current and historic mining sites. Since the existing RMC mining operations do not require either crushing or screening of the ore prior to placement on the heaps, all of the significant PM_{10} emissions result from fugitive sources, including drilling, blasting, loading, hauling, dozing, and wind erosion. No data is available

regarding the existing ambient PM_{10} levels in or immediately adjacent to the project area, although emissions from both historic and current mining sites in the area are a concern of the BLM and the residents of the Randsburg area.

Hydrocarbons or reactive organic gases (ROGs) are not strictly criteria air pollutants, but are recognized as precursors of photochemical oxidants, including ozone, which is a criteria air pollutant and which is formed through atmospheric photochemical reactions. Additionally, ROGs (also known as reactive organic compounds (ROCs)) are precursors to suspended particulate matter. Oxides of nitrogen (NO_x) and oxides of sulfur (SO_x), forms of which are criteria pollutants, are also precursors to photochemical oxidants (ozone) and suspended particulate matter. Table 4-9 below presents a list of the known secondary pollutants caused by the emissions of ROG (ROC), NO_x, and SO_x.

Table 4-9: Secondary Pollutants from Emissions of ROG, NO_x, and SO_x

PRECURSOR	SECONDARYPOLLUTANTS	
Reactive Organic Compounds (ROCs)	a)	photochemical oxidant (ozone)
	b)	the organic fraction of suspended particulate matter
Oxides of Nitrogen (NO_x)	a)	nitrogen dioxide (NO_2)
	b)	the nitrate fraction of suspended particulate matter
	c)	photochemical oxidant (ozone)
Oxides of Sulfur (SO_x)	a)	sulfur dioxide (SO_2)
	b)	sulfate (SO_4)
	c)	the sulfate fraction of suspended particulate matter

SOURCE: South Coast Air Quality Management District (SCAQMD) Permit Application Training Program Manual.

Principal sources of ROGs in the atmosphere include vehicular and industrial emissions and unsaturated hydrocarbon emissions from vegetation, including trees. No data is available regarding the levels of hydrocarbons in the ambient air in the project area or immediate vicinity, but they are presumed negligible due to the lack of significant emission sources, including the existing RMC projects, which have few sources of ROGs (principally vehicular and mining equipment, as

well as stationary diesel engines used by water well pumps). Similarly, no data is available regarding existing levels of sulfur dioxide (SO_2) and nitrogen dioxide (NO_2) in the ambient air in the immediate project area. The levels of these pollutants are also presumed to be small because of the lack of local sources, including the existing RMC projects, which have few sources (again, principally vehicular and mining equipment, as well as the diesel engines for the water well pumps and the furnace). However, the cement plants in Mojave and Tehachapi are upwind sources of substantial NO_2 emissions.

Federal Prevention of Significant Deterioration (PSD) regulations require that the maximum allowable increase in particulate matter (TSP) in Class I airsheds (those areas provided the greatest protection from increases in ambient concentrations of air pollutants) resulting from emissions from a major stationary source is 5 $\mu g/m^3$ (annual geometric mean) and 10 $\mu g/m^3$ (24-hour maximum). Specific types of facilities which emit, or have the potential to emit, 100 tons per year or more of PM_{10}, or any facility which emits, or has the potential to emit, 250 tons per year or more of PM_{10}, is considered a major stationary source (however, fugitive emissions are <u>not</u> counted as a part of emissions calculations for PSD). Since the existing RMC project emits essentially only fugitive PM_{10}, this project is not subject to the PSD regulations. Only one (1) Class I airshed occurs within 100 kilometers of the proposed project area. This Class I airshed is the Dome Land Wilderness, which is located approximately 80 kilometers northwest of the project area.

Both federal and California laws and regulations also regulate the emission of, and the public notification requirements for, air toxics (or hazardous air pollutants), some of which are typically emitted by precious metal mining operations. California's Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588, California Health and Safety Code Section 44360 et seq.) requires specified facilities to submit comprehensive air toxics emission inventory plans and reports to local air pollution control districts, to be used to conduct a regional health risk assessment (HRA) of approximately 400 toxic substances identified by AB 2588. In addition to requiring such an inventory, AB 2588

established standards and requirements for health risk assessments and public notification of potential health risks. To provide further guidance and standards for the preparation of individual HRAs, the California Air Pollution Control Officers Association (CAPCOA) published guidelines for the preparation of HRAs. This document was produced in consultation with the California Air Resources Board (CARB) Air Toxicology Unit and the CARB Special Projects Section, Toxic Air Contaminant Identification Section.

In compliance with AB 2588, RMC had prepared and submitted to the KCAPCD estimates of the air toxic emissions from the RMC mining operations within the project area during the 1990 and 1992 calendar years. In response to supplemental requests from the KCAPCD, RMC also had prepared an HRA for the 1990 calendar year air toxic emissions following the CAPCOA Guidelines.

To provide a background level against which to compare the potential health risks from the air toxics to be emitted by the Proposed Action, WZI, Inc., under contract to RMC, prepared an assessment of the estimated air toxic emissions and an assessment of the potential health risk from the existing RMC mining operations within the project area (see Appendix F). As with previous assessments of potential health risk, this assessment followed the CAPCOA Guidelines as well as guidance provided by the KCAPCD.

The primary source of air toxic contaminants resulting from RMC activities are fugitive dust emissions. RMC sampled waste and ore rock and road bed material from the current operation during 1993 which were analyzed by a third-party laboratory. The laboratory's analysis provided WZI, Inc. with an estimated toxic fraction of the dust emitted by RMC operations. Estimates used by WZI, Inc. as to emissions of dust emissions were based upon production plans provided by RMC using emission factors provided by CARB, EPA, and the KCAPCD, as well as recent source tests. These emission factors produce generally conservative results, although actual dust emissions may be higher or lower than those calculated because of the uncertainty surrounding site-specific input parameters.

In the preparation of their air toxics assessment, WZI, Inc. utilized a computer model post-processor, ACE2588, which has been widely used in California for compliance with AB 2588. ACE2588's inputs include the concentrations calculated by the air dispersion model (ISC2 or equivalent), air toxic emissions by source, unit risk factors of each toxic compound, and information relating to multiple pathway effects related to health risk. The output of ACE2588 includes the concentration of each toxic compound in $\mu g/m^3$, receptor estimated total excess cancer risk, source and pollutant contributions to total cancer risk at specified receptors, receptor maximum acute exposure, and receptor maximum chronic exposure.

The multi-pathway analysis performed by WZI, Inc. was based on assumptions listed in the CAPCOA Guidelines dated January 1992. Based on the CAPCOA Guidelines, the determination of the maximum off-site cancer risk, the maximum individual off-site cancer risk at an existing receptor, and the combined inhalation and noninhalation risk are calculated for each receptor location. The inhalation risk is calculated by multiplying "ground level" concentrations of an air toxic by the air toxic-specific unit risk factor (from the CAPCOA Guidelines). The non-inhalation risk for each air toxic at a receptor location is calculated by multiplying the average daily dose by the potency slope (also included within the CAPCOA Guidelines). The average daily dose of each substance was calculated using the results of the dispersion model (ISC2) and the multipathway exposure algorithms found the CAPCOA Guidelines. The estimated risks for individual substances are then added to provide the total excess cancer risk for the receptor locations. The estimated risks for individual substances were added to provide the total excess cancer risk for the receptor locations. (CAPCOA Guidelines, p. III-33).

The CAPCOA Guidelines make it clear that there are many areas of uncertainty in making such health risk assessments, and following the guidelines will typically result in very conservative estimates (that is, the estimates of potential or actual health risk are too high), and so are best used in comparisons of relative risk. The WZI, Inc. assessment concluded that the maximum estimated excess cancer risk from emissions from the existing RMC projects at

any of the population areas near the project (Randsburg, Johannesburg, Red Mountain and Dog Patch) was 0.00000067, or 0.67 additional cases of cancer per one (1) million population, at Randsburg. The KCAPCD defines this risk level as not significant. For comparison purposes, for the general population of the United States, the risk of developing cancer is 0.333, or 333,333 cases of cancer per one (1) million population.

4.6. Vegetation and Range Resources

4.6.1. Vegetation Communities

The project area is located at elevations between 3,300 and 4,741 feet AMSL within the creosote bush scrub vegetation community (Dodge, 1993; Rado, 1993b; Brown, 1988; and McMains, 1987). The most recent vegetation study of the project is attached as Appendix G. Common perennial species in this community include creosote bush (*Larrea tridentata*), mormon tea (*Ephedra spp.*), burrobush (*Ambrosia dumosa*) and blackbush (*Coleogyne ramossisima*).

The Descarga area is dominated by creosote bush, which has been severely disturbed by historical mining operations and human habitation due to its close proximity to the town of Randsburg (Dodge, 1993). Understory shrubs are infrequent, but the Descarga plant site area contains four (4) to five (5) Joshua trees (*Yucca brevifolia*). The Baltic Mine area consists of creosote bush scrub species; a few Joshua trees are also present. The area has also been heavily disturbed from historical mining operations and OHV use (Dodge, 1993). The Yellow Aster open pit expansion area contains creosote bush, which dominates at the lower elevations, but ceases to appear above approximately 4,100 feet AMSL. Mormon tea is quite abundant in this area, and a few Joshua trees were observed at the hill summit (approximately 4,376 feet AMSL) (Dodge, 1993). Blackbush was found to be particularly abundant in this area (Brown, 1988). Large Joshua trees were observed around the Yellow Aster pit area (Gould, 1989).

The Lamont Valley area, which includes the Lamont open pit, Lamont Valley heap leach and waste rock stockpile facilities, and the satellite open pit area, are

dominated by creosote bush with an understory of blackbush, burrobush, bladder sage (*Salazaria mexicana*), and other perennial and desert shrubs (Dodge, 1993; McMains, 1987). Cholla (*Opuntia echinocarpa*) was frequently observed in the area. Numerous articulated and non-articulated Joshua trees were present. The Lamont Valley area has also been heavily disturbed by OHV use, with numerous roads and trails in the area (Dodge, 1993). The West Valley area contains creosote bush, along with burrobush and bladder sage. The steep, west-facing slope is subject to sheet erosion and consequently has poorly developed soils. Due to poorer soil quality, the vegetation found in the West Valley area is somewhat more sparse than in other portions of the Rand Project area. A few Joshua trees were observed on the hillsides and one cottontop cactus (*Echinocactus polycephalus*) with many stems was observed in the West Valley area (Dodge, 1993).

Two (2) of the vegetation surveys of the project area have identified *Eschscholzia minutiflora* (Little Gold Poppy) in several locations (Rado, 1993b; Faull, 1991). The survey conducted by Faull identified one of the subspecies, Red Rock Poppy (*Eschscholzia minutiflora twisselmannii*), which is a Category 2 federal candidate species. A Category 2 federal candidate species is one which is not protected under the Endangered Species Act, but is under review for listing pending additional information. This subspecies was identified in three (3) locations in Section 1, Township 30 South, Range 40 East, MDB&M, within the Baltic Mine area of operations (Faull, 1991). Approximately 250 plants were found in an undisturbed area of Fiddler Gulch area; approximately 500 plants were found in an undisturbed area in the extreme southeast quarter of Section 1; and approximately 26 plants were found adjacent to the east side of the Baltic Mine processing facility. The Rado survey identified the species in several locations in the eastern portion of the project area.

Because this species is extremely sensitive to precipitation, identification of this species can be difficult from year to year. The two (2) surveys which did identify the species were conducted in the spring of a very wet precipitation year. In addition, the identification of the subspecies is even more difficult and has to be made at a specific point in the germination cycle. Because of the very low

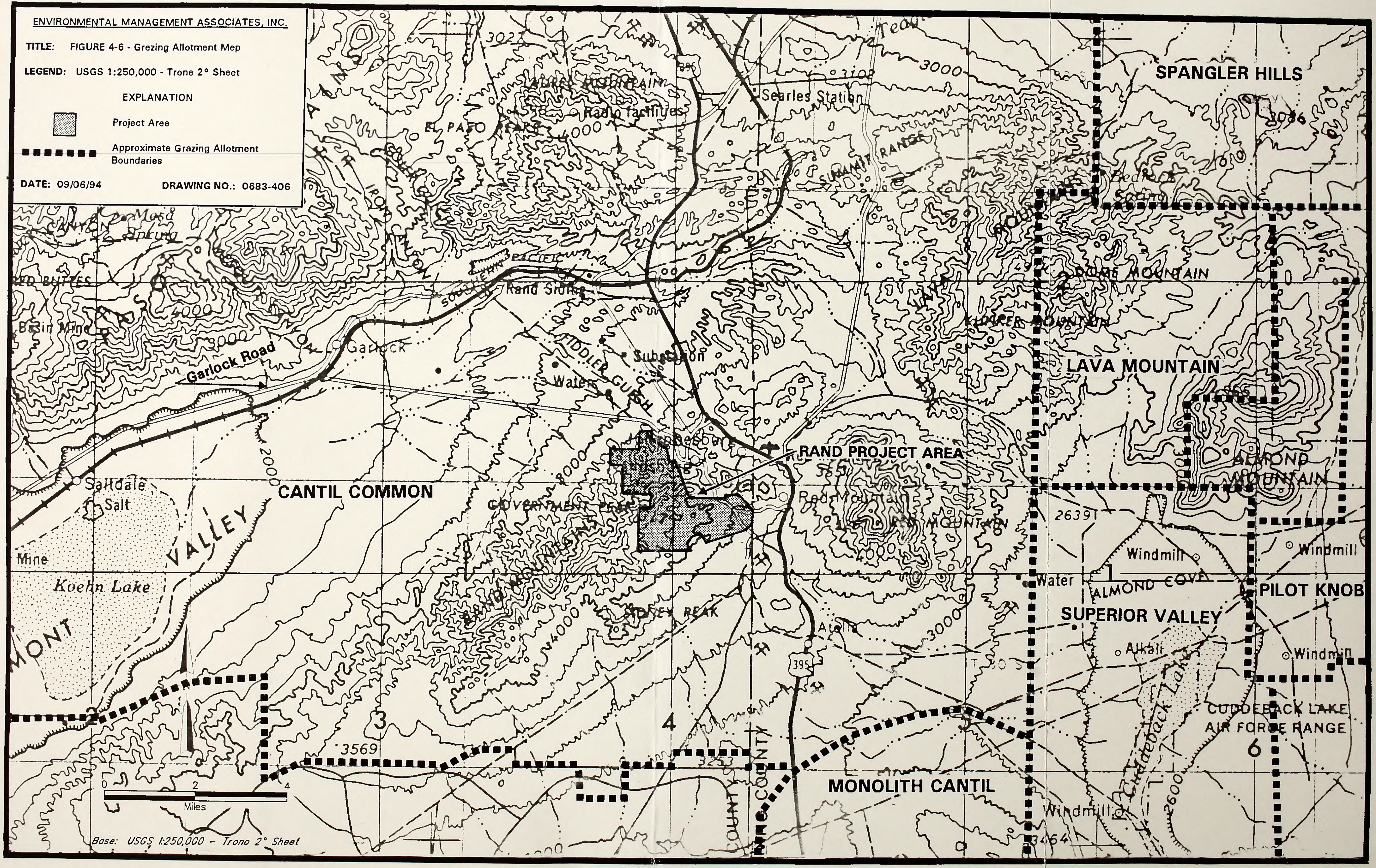
amount of precipitation since the spring of 1993, only the populations of the Red Rock Poppy southeast of the Baltic Pit and the Little Gold Poppy north of the mine offices have been observed in 1994.

4.6.2. Range Resources

The project area is located entirely within the Cantil Common Allotment, which has been used for sheep grazing for approximately 130 years (Figure 4-6). Fifteen (15) permittees graze sheep in common in the allotment (USDI, 1983). Because this allotment is an ephemeral allotment, the permitted use of the allotment varies year-to-year depending on the annual forage production. The grazing capacity of land within this allotment varies depending primarily upon precipitation, and forage production can vary from less than 200 pounds per acre (lb/acre) to more than 5,000 lb/acre. Grazing in the allotment was not allowed from 1989 through 1990 and in 1994 due to below-average precipitation and, therefore, limited forage production (Sjaastad, 1994). Grazing was allowed in the allotment during 1991 through 1993; however, grazing was only allowed in that portion of the allotment north of the Garlock Road. The area south of the Garlock Road, which includes the entire project area, was excluded from grazing to protect desert tortoise habitat (Harris, 1993). In addition, the BLM is currently evaluating livestock use of the portion of the allotment within the Rand Mountains/Fremont Valley Management Area to determine what, if any, additional restrictions may be necessary on the use of the allotment for sheep grazing to protect the desert tortoise (Sjaastad, 1994). Management of this area is further discussed in Section 4.11, Land Use and Wilderness.

4.7. Wildlife Resources

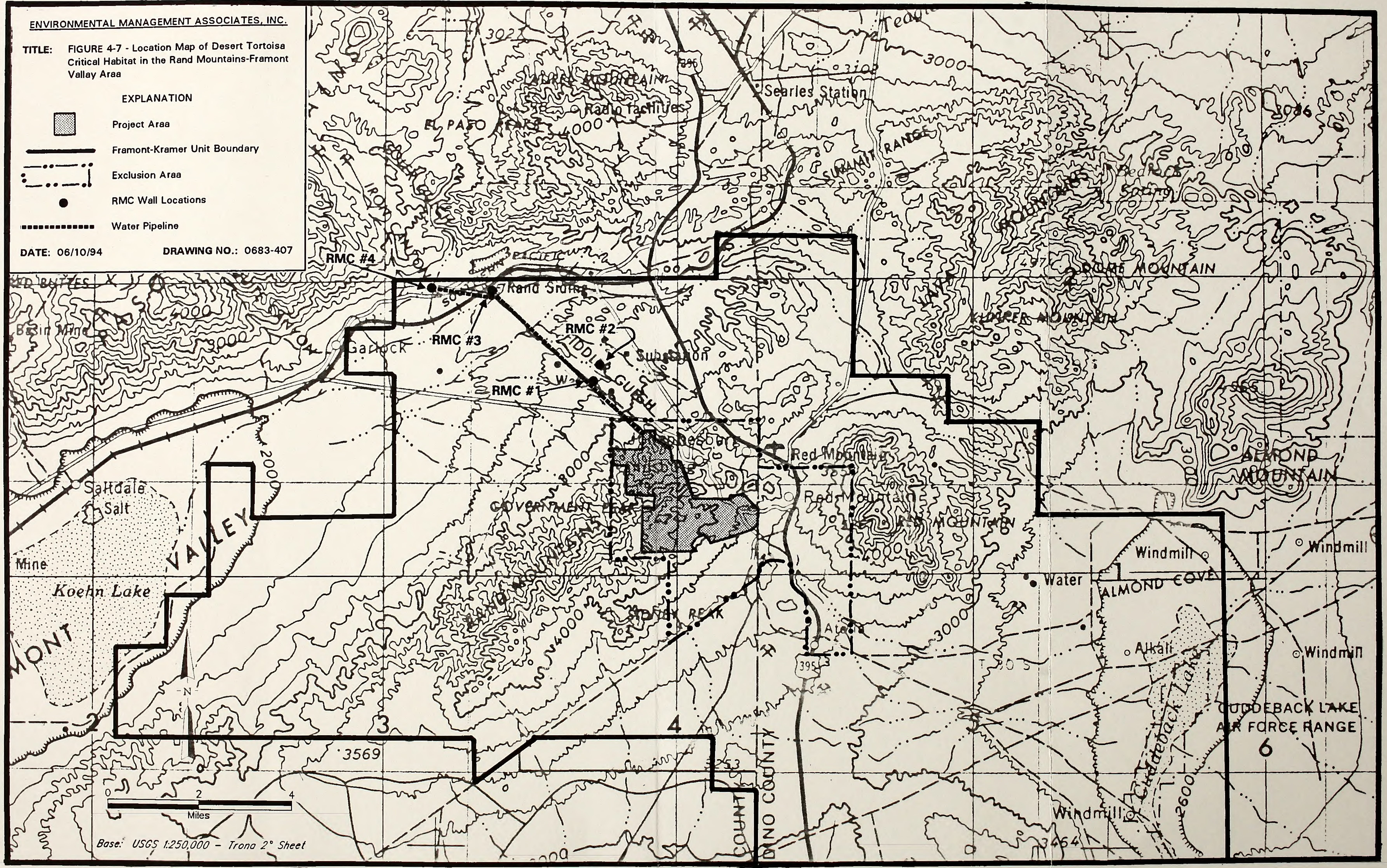
A biological (botanical and wildlife) survey of the project area was conducted in spring of 1993 (Rado, 1993b) (see Appendix H). This survey covered the 2,520-acre project area, including both those portions of the project area which previously had not been surveyed as well as those portions which had been previously surveyed. Information from the previous surveys was incorporated into this current survey (McMains, 1987; Brown, 1988, 1992; Gould, 1988; Rado, 1990, 1991, 1992, 1993a;


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-6 - Grezing Allotment Mep
LEGEND: USGS 1:250,000 - Trone 2° Sheet
EXPLANATION
Project Aree
Approximate Grazing Allotment Boundaries
DATE: 09/06/94
DRAWING NO.: 0683-406
SPANGLER HILLS
Searles Station
Radio facilities
EL PASO PEAKS
SUMMIT RANGE
Rand Siding
DOBLE MOUNTAIN
Garlock
Garlock Road
FIDDLER GULCH
Substation
Water
LAVA MOUNTAIN
RAND PROJECT AREA
ALMOND MOUNTAIN
Saltdale
Salt
CANTIL COMMON
VALLEY
RED MOUNTAIN
2639
Mine
Windmill
Koehn Lake
ALMOND COVE
PILOT KNOB
SUPERIOR VALLEY
Alkali
Windmill
395
CUDDEBACK LAKE AIR FORCE RANGE
3
4
6
3569
MONOLITH CANTIL
Cuddeback Lake
Windmill
3464
Miles
Base: USGS 1:250,000 - Trono 2° Sheet

and O'Farrell Biological Consulting, 1990). As discussed in Chapter 2, the Proposed Action is defined to include implementation of the reclamation plan and measures designed to reduce impacts to the desert tortoise (*Gopherus agassizii*), a federally listed threatened species that has a geographic range that encompasses the proposed project area, and the Mohave ground squirrel (*Spermophilus mohavensis*), a state-listed threatened species known to occur within this area. The USFWS has released a draft of their inventory of critical habitat for the desert tortoise, which includes the water pipeline and water well portions of the project area and the areas immediately surrounding the project area (Figure 4-7).

The entire project area consists of creosote bush scrub habitat (Rado, 1993b), and the various wildlife species which have been observed in this habitat are typical of the central Mojave Desert, including resident and migrant birds, small mammals and reptiles. A complete species list for the project area is included in Appendix H. The dominant species include desert cottontail (*Sylvilagus audubonii*), desert woodrat (*Neotoma lepida*), coyote (*Canis latrans*), western pipistrelle bat (*Pipistrellus hesperus*), black-throated sparrow (*Amphispiza bilineat*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), chukar (*Alectoris graeca*), horned lark (*Eremophila alpestris*), barn owl (*Tyto alba*), rockwren (*Salipinctes obsoletus*), western whiptail lizard (*Cnemidophorus tigris*), desert spiny lizard (*Sceloposus magister*), desert tortoise (*Gopherus agassizii*), long-nosed snake (*Rhinocheilus leconteii*), gopher snake (*Pituophis melanoleucus*) and sidewinder (*Crotaus cerastes*).

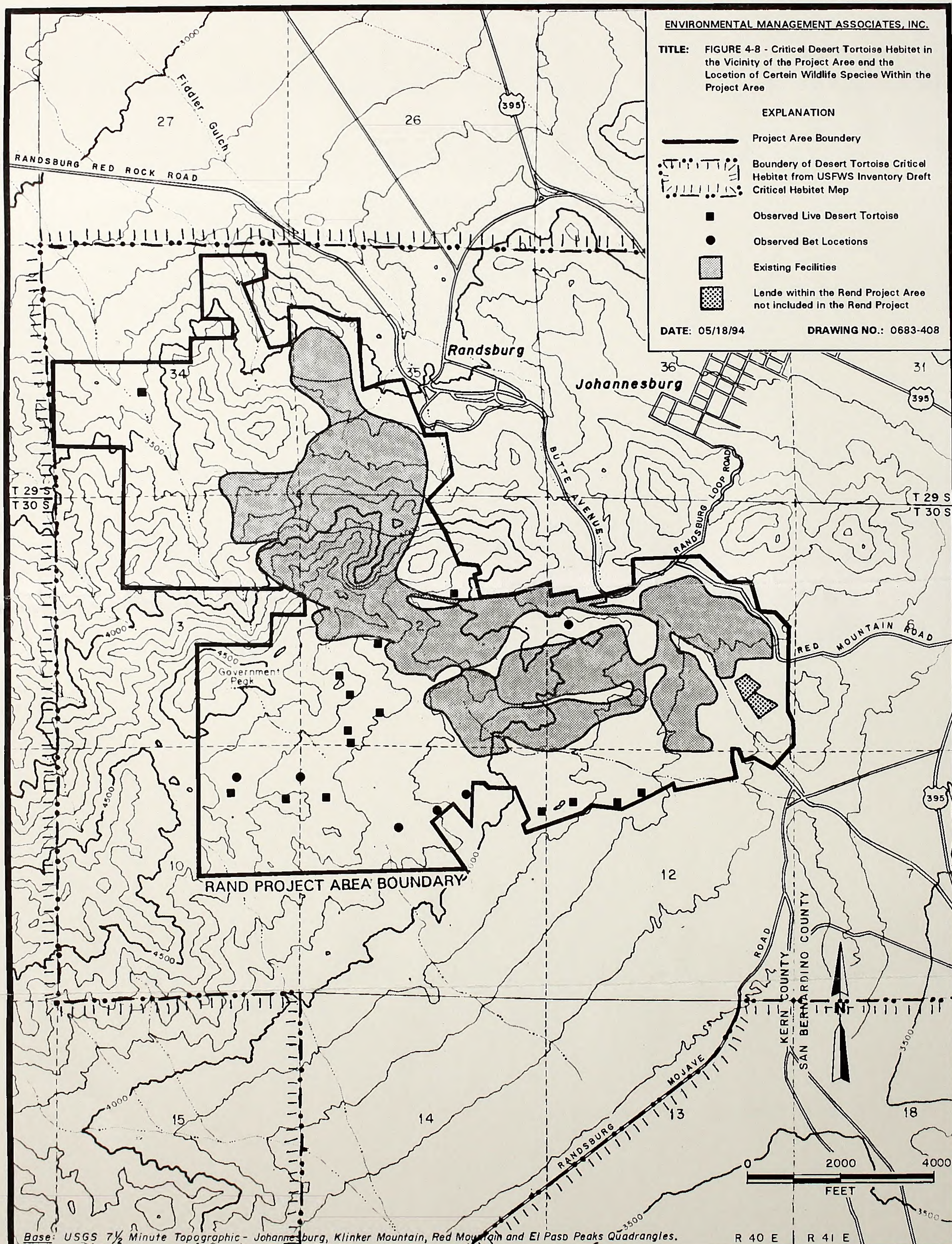
Observations of sensitive wildlife species include desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Spermophilus mohavensis*), Townsend's big-eared bat (*Plecotus townsendi*), and prairie falcon (*Falco mexicanus*). The desert tortoise (*Gopherus agassizii*) is a federal and state-listed threatened species and the Mohave ground squirrel (*Spermophilus mohavensis*) is a federal Candidate 2 species and state-listed threatened species (Rado, 1993b). Townsend's big-eared bat, a federal Candidate 2 species, as discussed below, has also been identified in a few locations within the project area. The Le Conte's thrasher (*Toxostoma lecontei*) was identified in the project area during a previous field investigation (McMains, 1987), but was not observed during the 1993 field study (Rado, 1993b). The Le Conte's thrasher is a CDFG Species of Concern. Other federal and state-listed threatened or endangered


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-7 - Location Map of Desert Tortoisa Critical Habitat in the Rand Mountains-Framont Vallay Araa
EXPLANATION
Project Araa
Framont-Kramer Unit Boundary
Exclusion Araa
RMC Wall Locations
Water Pipeline
DATE: 06/10/94
DRAWING NO.: 0683-407
RMC #4
RMC #3
RMC #2
RMC #1
Rand Siding
Garlock
Substation
Searles Station
Radio facilities
EL PASO PEAKS
SUMMIT RANGE
DOME MOUNTAIN
ALMOND MOUNTAIN
Red Mountain
RED MOUNTAIN
Saltdale
Salt
Mine
Koehn Lake
VALLEY
GOVERNMENT PEAK
Atolia
Water
Windmill
Alkali
ALMOND COVE
CUDDEBACK LAKE AIR FORCE RANGE
Cuddeback Lake
395
3569
3464
2
3
4
6
Miles
Base: USGS 1:250,000 – Trona 2° Sheet

species or other sensitive species not identified in the project area, but known to occur in the region, include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), burrowing owl (*Athene cunicularia*) and American badger (*Taxidea taxus*) (Rado, 1993b). All birds are considered migratory birds under the Migratory Bird Treaty Act with the exception of three (3): English sparrow (*Passer domesticus*), starlings (*Sturnus vulgaris*), and barnyard pigeons (*Columba livia*).

A survey for bats has been conducted over portions of the project area, which included the Baltic Mine area, Lamont Valley area and the West Valley area (Brown, 1993) (see Appendix I). One hundred thirty (130) mine openings were surveyed either by entering or observing the entrances after dusk. Of the ninety-seven (97) mines entered only three (3) had guano and none had bats. Of the fifteen (15) mines observed, Townsend's big-eared bat exited from six (6) mines, small *Myotis* sp. (probably *californicus*) flew in and out of several mines, and a western pipistrelles bat was observed flying. The location of the these mines are shown on Figure 4-8 and in Appendix I. During the survey, the distinctive communication sound of pallid bats (*Antrozous pallidus*), a CDFG Species of Concern, was heard in the vicinity of the shaft in the West Valley area.

The 1993 biological assessment survey included a detailed assessment of the desert tortoise and the Mohave ground squirrel habitat within the project area (Rado, 1993b) (see Appendix H). A total of 15 live desert tortoise, 22 carcasses (including disarticulated animals), nine (9) skeletal fragments, 89 burrows/pallets, and 16 scat were observed (Rado, 1993b). All observed live desert tortoise appeared to be in good health. Desert tortoise were widely distributed over the project area, but the distribution was uneven, with the highest concentration of tortoise sign and actual tortoises in the south portion of the project area, in Lamont Valley and the ridge to the south and southeast (Figure 4-8) (Rado, 1993b). The number of carcasses and skeletal fragments are disproportionately high compared to the number of live tortoise. This is probably due to avian predators bringing tortoise into the project area from low-lying areas, which is supported by the high number of carcasses observed on hilltops, ridgelines and steep slopes.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-8 - Critical Desert Tortoise Habitat in the Vicinity of the Project Area and the Location of Certain Wildlife Species Within the Project Area
EXPLANATION
Project Area Boundary
Boundary of Desert Tortoise Critical Habitat from USFWS Inventory Draft Critical Habitat Map
Observed Live Desert Tortoise
Observed Bat Locations
Existing Facilities
Lands within the Rand Project Area not included in the Rand Project
DATE: 05/18/94
DRAWING NO.: 0683-408
Fiddler Gulch
RANDSBURG RED ROCK ROAD
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
RED MOUNTAIN ROAD
Government Peak
RAND PROJECT AREA BOUNDARY
KERN COUNTY
SAN BERNARDINO COUNTY
RANDSBURG MOJAVE ROAD
T 29 S
T 30 S
R 40 E
R 41 E
395
N
0
2000
4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

In addition to the 1993 biological assessment survey for desert tortoise, an assessment of the Mohave ground squirrel habitat within the project area was conducted (Rado, 1993a). The project area lies within the geographic range of the state-listed threatened Mohave ground squirrel. There are, however, no specific studies that provide information on the density of Mohave ground squirrel in the project area. Mohave ground squirrel have been observed in the project area, though none were observed during the 1993 studies (Rado, 1993a and 1993b). Mohave ground squirrel may potentially occur on those portions of the project that are vegetated, and assuming an average density of 15 to 20 animals per square mile, between 24 and 32 individuals may reside on the project area (Rado, 1993a).

4.8. Cultural and Paleontological Resources

4.8.1. Cultural Resources

Four (4) cultural resources inventories have been conducted on both public and private land within the project area (Halleran and Swope, 1987; Pruett, et al, 1988; Yohe and Swope, 1991; Parr and Swope, 1994). These inventories documented a total of 215 historic sites, the majority of which consist of prospect holes, shafts, or adits located within the Randsburg and Stringer Mining Districts. Two (2) of these sites were destroyed through development on private lands. At the present time, 213 historic sites remain. No prehistoric sites have been found. The most recent survey (Parr and Swope, 1994) identified 212 sites, while the one (1) remaining site was identified by previous studies (Halleran and Swope, 1987; Yohe and Swope, 1991). Due to the poor condition of these sites and the limited amount of data they possess, the BLM has determined that none of these sites meet the criteria for inclusion to the National Register of Historic Places.

4.8.2. Paleontological Resources

Because of their igneous and metamorphic origin, the rock units in the northeastern portion of the Rand Mountains are not likely to contain fossils. There are no known paleontological resources within or adjacent to the project area.

4.9. Visual Resources

The visual resources of the project area were investigated for this EIS/EIR using methods outlined in Section 8400 of the BLM Manual. Using these methods, the resources are analyzed by considering the scenic quality, viewer sensitivity and the distance between the viewer and the proposed modification of the landscape. The BLM visual resource management (VRM) system, which was developed by the BLM for identifying, evaluating and classifying visual resources of public lands, assigns a management class rating from I through IV by inventorying and evaluating both scenic quality and the sensitivity of a landscape (Table 4-10). The BLM is currently managing the public lands within the project area with a VRM rating of III.

The landscape characteristics of the project area consist of a complex terrain of hills, ridges and valleys that support a creosote bush scrub vegetation community. The landscape color consists of browns, tans and grays. Vegetation colors are generally browns, greens, yellows and tans. Because of the limited vegetation cover, landscape colors meld with vegetation colors from distant view points.

Table 4-10: BLM Visual Resource Management Classes

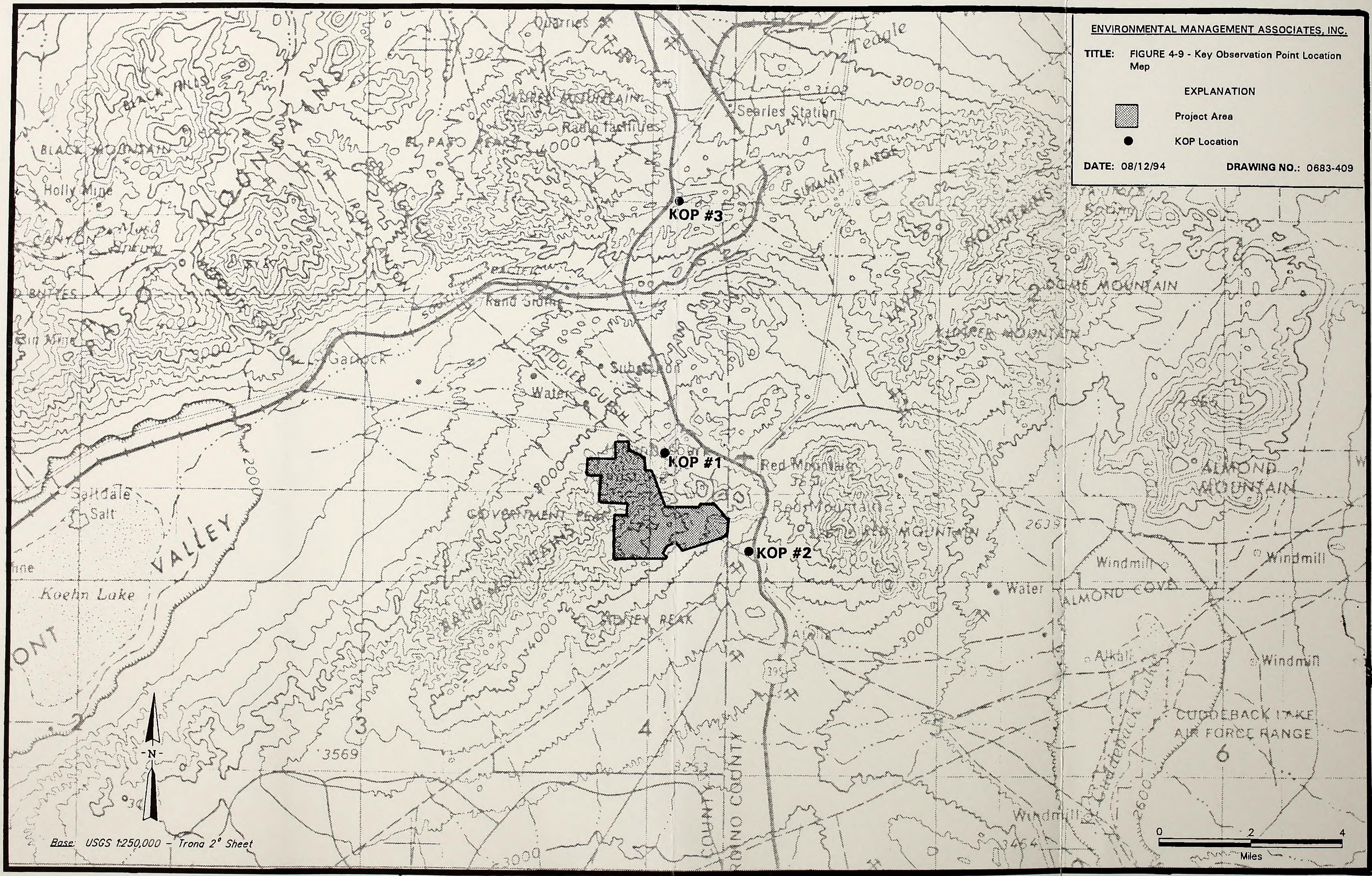
CLASS	DESCRIPTION
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant nature features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic element.

Source: USDI, 1986

The significant majority of the visitors to the project area would be mine employees, contractors, other mine-related personnel and OHV users. Access to the actual mining operations in the Randsburg area has been limited by RMC for safety and security reasons. The project area is not visible from any major travel routes or recreation areas, except for a very limited middle to background view one (1) mile southeast of the project area for vehicles traveling north on U.S. Highway 395 and for a distant view for vehicles traveling south on U.S. Highway 395 in Fremont Valley. The project area is also visible from County roads to the north and south of Randsburg, particularly for vehicles traveling south from U.S. Highway 395 into Randsburg. The project area is in the foreground to middleground for visitors on the local roads. Because mine employees and other related persons are the dominant potential viewers, and because of the limited recreational opportunities in the area to attract other viewers besides OHV users, the viewer sensitivity to the visual resources is currently considered to be low to slightly moderate.

Contrast ratings were conducted from three (3) selected viewing locations. These Key Observation Points (KOPs) were selected to represent the view from the road approaching the project area from the southeast and two (2) panoramic overviews of the project area (Figure 4-9). The visual contrast rating sheets are included in this document as Appendix J. KOP #1 was sited to represent a view of the project area when approaching from the north on the road connecting U.S. Highway 395 to Randsburg. Persons viewing the project area from KOP #1 would have a foreground view of a gently sloping surface to the south; the middleground would be composed of the historic mining town of Randsburg with evidence of historic mining activity; and from the middleground to the background would be to historic and active mining operations on the ridge south of Randsburg.

KOP #2 represents a view of the project area from U.S. Highway 395 approximately one (1) mile south of Red Mountain. This site is the only point at which the project area is even partially visible from a major public road south of Red Mountain at a distance where mining-related land forms could be distinguished. The project area would be situated in the middleground and background at the low point in the mountain range. The middleground would also be dominated by the evidence of historic mining activities.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-9 - Key Observation Point Location Map
EXPLANATION
Project Area
KOP Location
DATE: 08/12/94
DRAWING NO.: 0683-409
KOP #1
KOP #2
KOP #3
Searles Station
Radio facilities
SUMMIT RANGE
Holly Mine
BLACK HILLS
BLACK MOUNTAIN
Garlock
Rand Siding
Substation
Water
FIDDLER GULCH
Red Mountain
RED MOUNTAIN
ALMOND MOUNTAIN
DOME MOUNTAIN
GOVERNMENT PEAK
RAND MOUNTAINS
Saltdale
Salt
VALLEY
Koehn Lake
Windmill
ALMOND COVE
Alkali
CUDDEBACK LAKE
AIR FORCE RANGE
Cuddeback Lake
2639
3569
3464
3000
4000
2000
N
0
2
4
Miles
Base: USGS 1:250,000 – Trona 2° Sheet

KOP #3 represents a view of the project area from U.S. Highway 395, approximately six (6) miles north of the project area. From this portion of the highway individuals travelling south would have a foreground and middleground view of moderately sloping surfaces to the south, down to Fremont Valley, with the highway, railroad, other roads and a powerline creating linear features through this view. The middleground has moderately sloping surfaces increasing in elevation to the south, towards the town of Randsburg in the background. Beyond Randsburg to the south, in the mountains that form the skyline, mining-related land forms, which are conical in form, can be distinguished from the surrounded landscape.

Two (2) sets of photographic simulations of the project area are presented in Appendix J (Photograph J-1 through Photograph J-6). The first set of photographic simulations are for KOP #1 (Photographs J-1, J-2, and J-3), which is a view from the north of the project looking southwest at the waste rock stockpiles, open pit and other facilities. The second set of photographic simulations are an aerial view of the project area from the northwest (Photographs J-4, J-5, and J-6). Each set of photographic simulations has three (3) photographs: one of the current conditions at the project area (Photographs J-1 and J-4); another of the project area after completion of the currently approved operations (Photographs J-2 and J-5); and the project area after the completion of the proposed action (Photographs J-3 and J-6).

As stated above, Photographs J-1 and J-4 (see Appendix J) show the project area's current condition. At the completion of the currently approved operations, including reclamation (Photographs J-2 and J-5), the Yellow Aster, Lamont and Baltic open pits will have expanded. The north waste rock stockpile would be slightly expanded. The Baltic waste rock storage area would expand and appears as a stepped mesa. The Yellow Aster heap leach would be expanded, as would the West Valley waste rock stockpile.

4.10. Noise

The project area is located in a sparsely populated rural area, with the nearest residences located approximately 500 feet east of the Descarga operations,

approximately 3,000 feet southeast of the Baltic open pit at Dog Patch and approximately 3,000 feet northeast of the Yellow Aster open pit in Randsburg. The principal existing sources of noise in the area are the existing mining operations at the Yellow Aster Mine, Lamont Mine and Baltic Mine operations, sonic booms from military aircraft, vehicle traffic on nearby roads, including U.S. Highway 395, and off-highway vehicle activity. Electrical powerlines, wind and, to a lesser extent, birds and rain showers, contribute to the existing ambient noise level.

The local terrain is complex, which produces areas in which the noise from the existing mining and exploration operations may be sheltered or focused.

Limited noise measurements are available for the area, and the existing noise levels are known to be elevated relative to what would normally be expected in a rural desert areas like the project area. In conjunction with the vibration monitoring conducted by RMC in the towns of Randsburg, for the Yellow Aster Mine, and Red Mountain, for the Baltic Mine, over-pressure (air vibration or shock wave) monitoring was conducted. No over-pressure was observed in Randsburg or Red Mountain due to blasting.

Current RMC mining operations result in identifiable noise patterns, which include engine noise and back-up alarms from haul trucks, engine noise from loaders and other vehicles, blasting, and miscellaneous equipment noise from the process plants, shop and offices. The haul truck engine noise is generally generated during the traveling from the open pits to the waste rock stockpiles and heap leach pads and back to the open pits. The haul truck back-up alarm noise is generally generated at the open pits, waste rock stockpiles and heap leach pads during the loading and unloading of material from the haul trucks. As a result, this noises are generated on a 24-hour per day basis. The noise from blasting occurs once per day, during the day. Noise from loader operations occurs when the haul trucks are filled with material from the open pits; therefore, the noise generation is from within the open pits on a 24-hour per day basis.

The noise generated by these operations is typical of most mining projects and could be intense, up to 95 dBA at 25 feet. Blasting can cause very short-duration

noise levels in excess of 100 dBA at 25 feet. Assuming an average reduction of six (6) dBA when the distance from a noise source is doubled, the impacts to the nearest residences, which are approximately 500 feet east of the Descarga operations, can range from 63 to 76 dBA. Noise levels at the residences approximately 3,000 feet northeast of the Yellow Aster open pit can be in the range of 50 to 60 dBA adjacent to the outside of the residential structure. This is a maximum noise level, because as operations progress, a majority of the equipment operations and blasting is occurring in the open pits, which is below grade. The walls of the pits absorb some of the noise and tend to direct the rest of the noise upward, thus reducing the noise levels at the residence. This analysis is consistent with the over-pressure (air vibration or shock wave) monitoring conducted in Randsburg for the Yellow Aster Mine. In the vicinity of the Baltic operations, RMC has conducted an acoustical analysis (Walker, Celano & Associates, 1994; see Appendix K). Monitoring was conducted over periods up to 22 hours in February, March and May of 1994 at three (3) locations in the Dog Patch area. The analysis of the collected data indicates that the composite noise exposure in the Dog Patch area, computed per National Research Council recommendations, is in conformance with the outdoor noise requirements of the Kern County Noise Element of the County General Plan (Walker, Celano & Associates, 1994). Some recreational users and other residents of the area, such as those in Randsburg, Dog Patch and Red Mountain, may be affected by blasting noise, but operational noise likely results in minimal impacts to the human environment.

4.11. Land Use and Wilderness

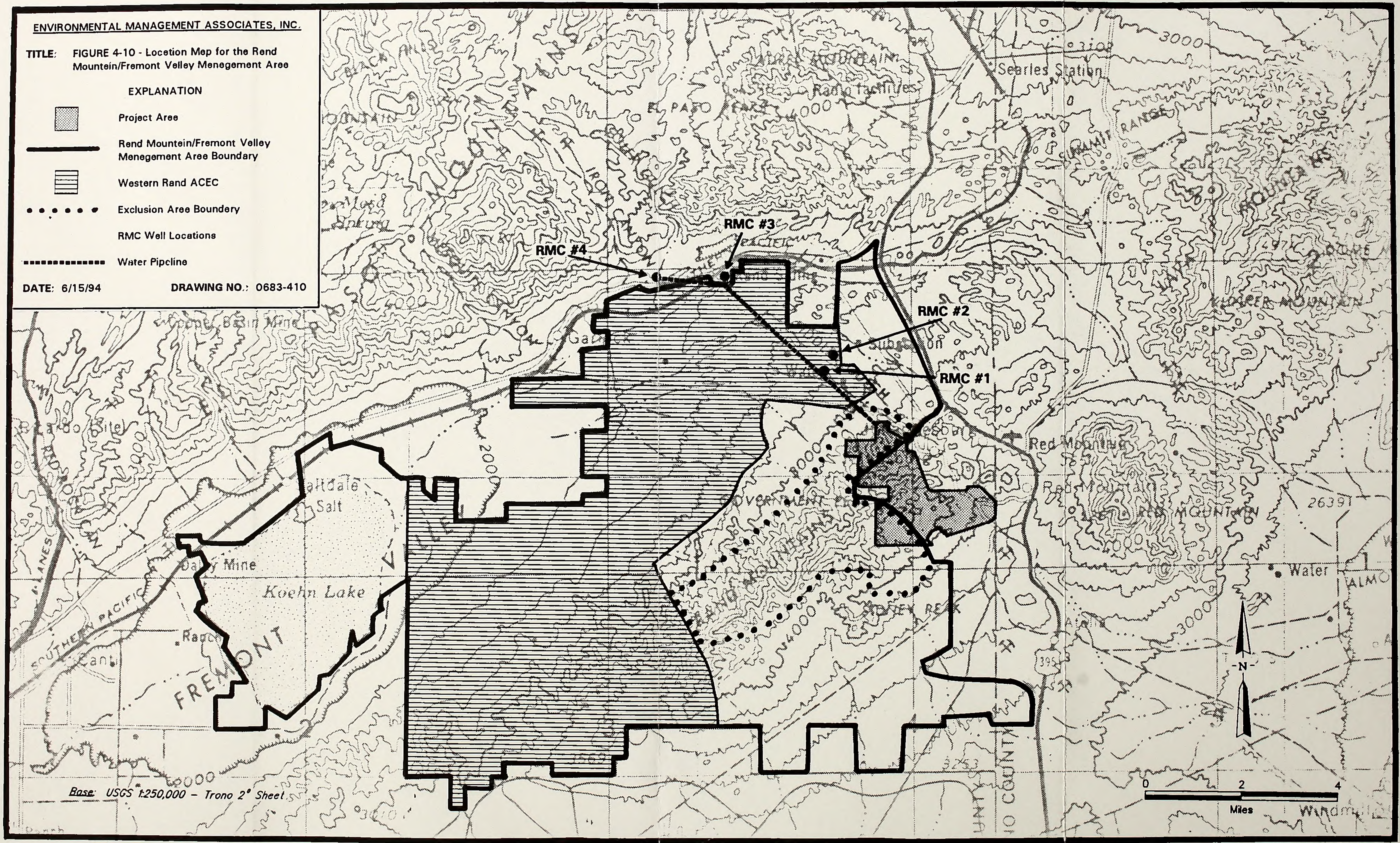
The main portion of the project area is located within portions of Sections 34 and 35, Township 29 South, Range 40 East and Sections 1, 2, 11 and 12, Township 30 South, Range 40 East, MDB&M. Land use within the project area consists of mineral exploration and development, public recreational use, wildlife habitat and livestock grazing. Mineral activities, wildlife habitat and livestock grazing have been discussed previously.

4.11.1. Land Use Classifications

The project is located within the California Desert Conservation Area in a Class M multiple-use class area (see Section 1.2.4). In addition, the project area is located adjacent to and partially within the Rand Mountains/Fremont Valley Management Area (RMFVMA). The location of the project area in relationship to the RMFVMA is shown on Figure 4-10. The Mojave Desert Tortoise Natural Area (DTNA) is located approximately 11 miles southwest of the project area. The project area is located to the southeast and partially within the recently expanded Western Rand Area of Critical Environmental Concern (Western Rand ACEC) (Figure 4-10). The only portions of the existing project actually within the Western Rand ACEC are water supply wells RMC #1, RMC #2, and RMC #3 and a portion of the existing pipeline right-of-way.

The management of the RMFVMA, as described in the RMFVMA Plan, dated April, 1993, is directed towards ensuring that a viable population or populations of the desert tortoise continue in the RMFVMA. The portion of the Rand Mountains to the east of the RMFVMA, which includes the Rand Project area, was not included in the management area because of the limited amount of public land and low quality of the tortoise habitat (USDI, 1993). The portion of the Rand Project area within the RMFVMA is located within a 6,080 acre portion of the RMFVMA along the crest of the Rand Mountains which remains Land Use Class M and continues to allow for mineral entry as well as other use activities. A portion of the existing water supply pipeline, along with associated ongoing maintenance activities, that serves the RMC operations is located in a portion of the RMFVMA that would be designated land use Class L within the expanded Western Rand ACEC.

The BLM is also in the process of developing the West Mojave Coordinated Management Plan (Mojave Plan) (Gum, 1993). The Rand Project area is also within lands to be covered by this plan. The Mojave Plan will be designed to manage critical habitat for the desert tortoise and the Mohave ground squirrel through the designation of seven (7) management areas. The management areas will be subdivided, based on four (4) zones of management activities. The Rand


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-10 - Location Map for the Rand Mountain/Fremont Valley Management Area
EXPLANATION
Project Area
Rand Mountain/Fremont Valley Management Area Boundary
Western Rand ACEC
Exclusion Area Boundary
RMC Well Locations
Water Pipeline
DATE: 6/15/94
DRAWING NO.: 0683-410
RMC #1
RMC #2
RMC #3
RMC #4
Searles Station
Radio facilities
Red Mountain
Koehn Lake
Saltdale
Salt
FREMONT
SOUTHERN PACIFIC
Water
Base: USGS 1:250,000 - Trona 2° Sheet
N
0
2
4
Miles

Project area is currently located within an area identified for the continuation of existing types of activities (Gum, 1993).

The BLM has issued a number of right-of-ways within and surrounding the project area. These include a powerline withdrawal (SO 11/11/1929; Wdl Pwr S Cl; 241; 20"); a powerline right-of-way (R 2817; 12.5"; 3/4/1911); two (2) telephone cable right-of-ways [(CACA 23092; 5'; UNDGD)(CACA 15546; 5'; UNDGD)]; and three (3) telephone line right-of-ways [(LA 0125334; 15'; 3/4/1911)(LA 0152574; 15'; 3/4/1911) (LA 0119205; 15'; 3/4/1911)].

The project area is located under the Department of Defense's (DOD's) R-2508 Special Use Airspace Complex, specifically the Isabella Military Operations Area (Isabella MOA), which permits military aircraft operations as low as 200 feet above ground level. Almost directly east of the project area is the Edwards Air Force Base/Air Force Flight Test Center's Restricted Area R-2515, which permits supersonic and other military activity at all altitudes. Military flight operations, including sonic booms, are considered to be compatible with mining operations currently conducted within the project area.

The project area is located in Kern County zoning districts NR20 (Natural Resources District 20 ac. min.) and A1 (Limited Agriculture District), and the county land use map indicates a Resource designation. Uses allowed under this designation include general agricultural uses, residential uses and resource extraction and energy development uses. Mining activities are allowed in these zoning districts upon issuance of a Conditional Use Permit.

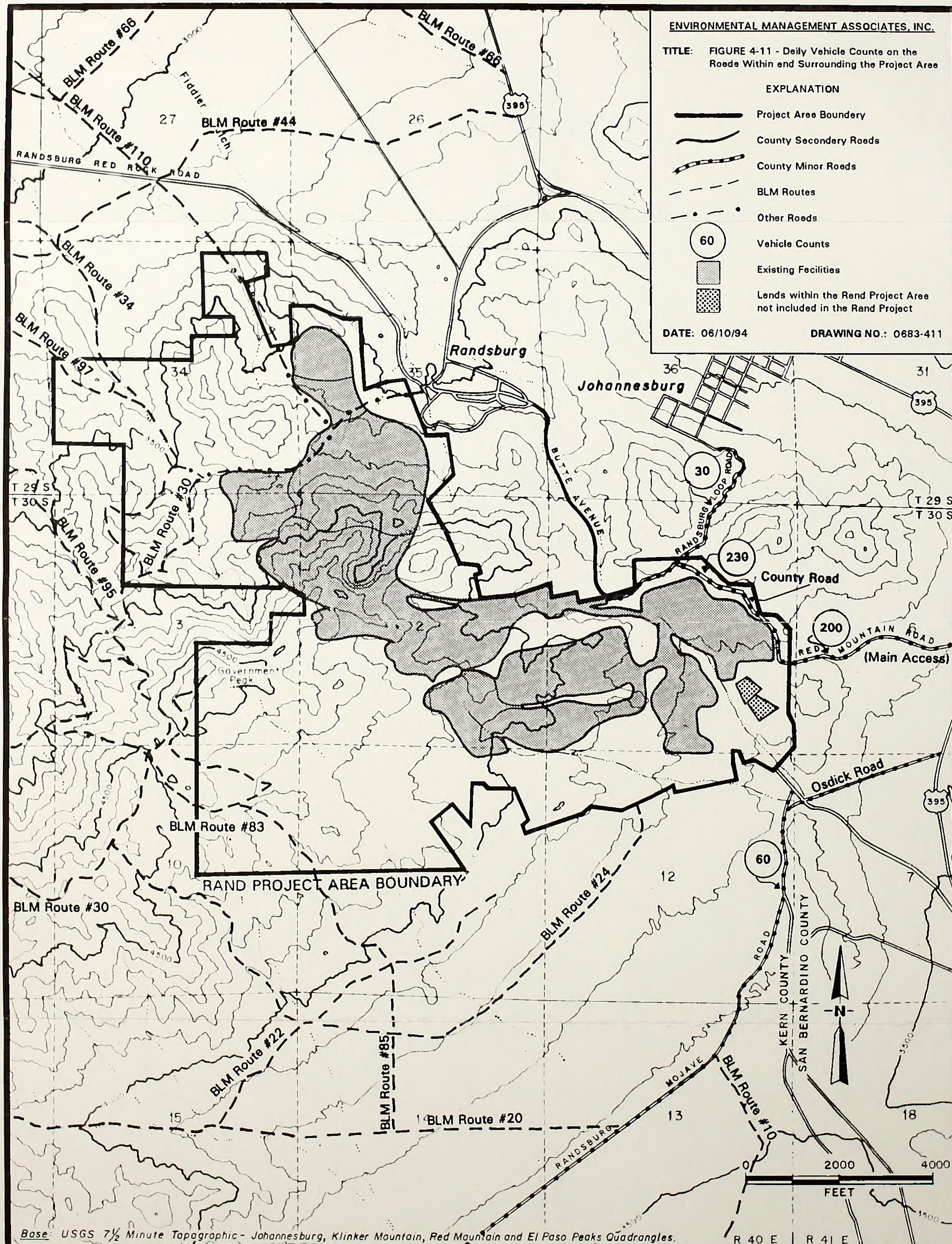
4.11.2. Road System

A county secondary road and several minor roads are located adjacent to the project area. Kern County has conducted vehicle counts of traffic use on these county roads and has been supplied with vehicle count data on U.S. Highway 395 from Caltrans. The most recent information is for 1990 (Cannon, 1991). This traffic information has been modified to reflect the recent closure of a portion of Butte Avenue and the construction of the relocated county road around the Baltic

Mine Project (Figure 4-11). As revised, approximately 230 trips per day are made on Butte Avenue south of Randsburg. Of these 230 trips, 30 trips continue on the Randsburg Loop Road into Johannesburg and the remaining 200 trips continue on the relocated road around the Baltic Mine Project facility to Red Mountain and either enter on to U.S. Highway 395 or stop in Red Mountain. Of these 200 trips, 60 continue on U.S. Highway 395 for approximately 0.5 miles and then exit on to the Randsburg-Mojave Road. Kern County has designated Butte Avenue as a secondary road, and all other county roads in the project area as minor roads. BLM routes for OHV use in the area surrounding the project area are shown on Figure 4-11.

4.11.3. Recreation Resources

Public recreational use of the Rand Mountains area consists mostly of OHV use, both by individuals and by OHV enthusiast organizations (Phillips, 1991). Identified BLM routes for OHV use in the area surrounding the project area are shown on Figure 4-11. The Spangler Off Highway Vehicle Area is located approximate eight (8) miles north of the project area, on the east side of U.S. Highway 395. Numerous organized OHV events have been held around the area in the past; however, in recent years the number of these events has been reduced (USDI, 1993). The unorganized OHV casual use in the area has increased due to restrictive limitations in the surrounding areas. Four-wheel vehicle use of the area is generally to the west of Government Peak; access to Randsburg is generally via travel on the Randsburg-Mojave Road to the Red Mountain area, and then in to Randsburg (Grimsley, 1993). Motorcycle use appears to be more widespread than the four-wheel vehicle use, also occurring to the north and south of Government Peak. Access to Randsburg by the motorcycles is to the north from the Government Peak area, on BLM Routes 30 and 34, to an undesignated dirt road in Section 34, which leads directly in to Randsburg (Figure 4-11). Randsburg is a destination of choice for OHV recreationists, and long distance trips can start from several locations. Many of the OHV used in the area are not licensed for highway or county road use.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 4-11 - Daily Vehicle Counts on the Roads Within and Surrounding the Project Area
EXPLANATION
Project Area Boundary
County Secondary Roads
County Minor Roads
BLM Routes
Other Roads
60 Vehicle Counts
Existing Facilities
Lands within the Rand Project Area not included in the Rand Project
DATE: 06/10/94
DRAWING NO.: 0683-411
BLM Route #66
BLM Route #110
BLM Route #44
BLM Route #34
BLM Route #97
BLM Route #30
BLM Route #95
BLM Route #83
BLM Route #24
BLM Route #22
BLM Route #85
BLM Route #20
BLM Route #10
RANDSBURG RED ROCK ROAD
Fiddler Gulch
Randsburg
Johannesburg
BUTTE AVENUE
RANDSBURG LOOP ROAD
County Road
RED MOUNTAIN ROAD
(Main Access)
Osdick Road
Government Peak
RAND PROJECT AREA BOUNDARY
RANDSBURG MOJAVE ROAD
KERN COUNTY
SAN BERNARDINO COUNTY
30
230
200
60
T 29 S
T 30 S
R 40 E
R 41 E
N
0 2000 4000
FEET
Base: USGS 7½ Minute Topographic - Johannesburg, Klinker Mountain, Red Mountain and El Paso Peaks Quadrangles.

There are approximately 65 miles, or 120 acres, of OHV routes in the northeastern Rand Mountains that are currently used (USDI, 1989 and 1993). The approval of the RMFVMA Plan in 1993 established a network of designated OHV routes within the RMFVMA. These designated routes total approximately 22 miles, or 40 acres, of road. Of the remaining 43 miles, or 80 acres, of routes approximately 38 miles, or 70 acres, will eventually be closed under the RMFVMA Plan.

In addition to OHV use, other recreational uses of the area include hunting for chukar, target shooting and miscellaneous other recreational uses. The nearest public parks or recreation areas are the Randsburg city park and the Red Rock Canyon State Park, located approximately 20 miles west of the project area.

4.11.4. Wilderness

The closest existing wilderness areas to the project area are the Golden Valley Wilderness, which is approximately 2 miles to the northeast, the El Paso Mountains Wilderness, which is approximately 10 miles to the northwest, and the Grass Valley Wilderness, which is approximately 10 miles to the southeast. There are a total of 15 Wilderness Areas and three (3) Wilderness Study Areas (WSAs) within 60 miles (100 kilometers) of the project area (Figure 4-12).

4.12. Socioeconomics

The nearest population center to the project area is the town of Randsburg, approximately one (1) mile north of the project area. Most services are obtained in Ridgecrest, approximately 25 miles north of the project site. Based on information obtained from the Ridgecrest Chamber of Commerce, Ridgecrest serves a population exceeding 38,000, which includes China Lake, Inyokern, Johannesburg, Randsburg, Red Mountain, Trona, Argus Westend, Kern River Valley Area and Owens Lake Area (Ridgecrest Chamber of Commerce (RCC), 1986).

The economy of Ridgecrest has been based principally on support of the Naval Air Weapons Station (NAWS) at China Lake since the NAWS was established in

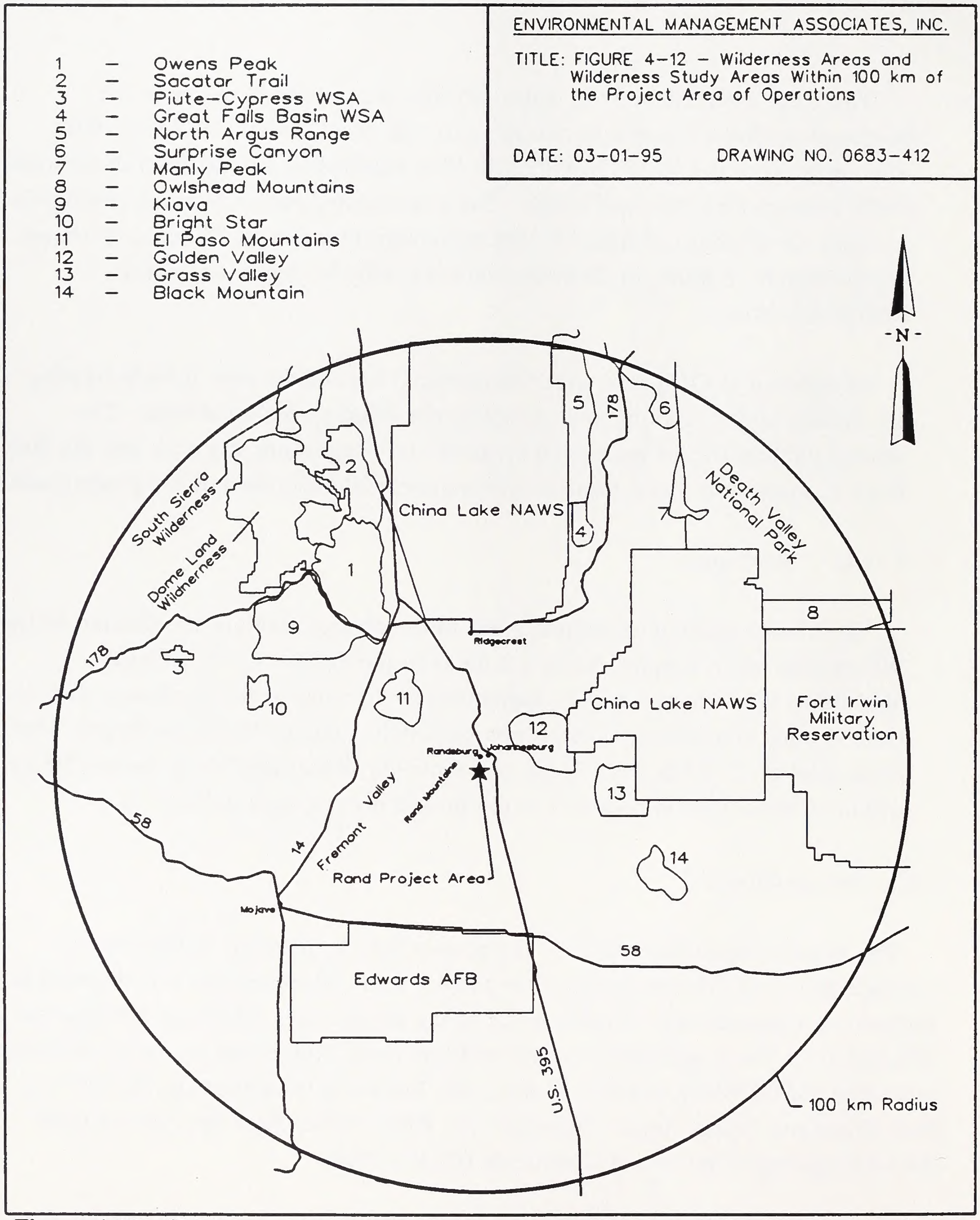


Figure 4-12: Wilderness Areas and Wilderness Study Areas Within 100 km of the Project Area of Operations.

1943. The NAWS and industries directly related to the NAWS are the major source of employment in the Ridgecrest area. Other employers in the area are manufacturing plants, tourism, mining and the government (RCC, 1993).

Information on current housing availability for the Rand Communities (Randsburg, Johannesburg, Red Mountain and Atolia) and the surrounding area is not documented. Electricity in the project area is provided by SCE, telephone service is provided by Contel, and water service is provided by the Rand Communities Water District. One (1) elementary school is located in Johannesburg, approximately one (1) mile north of the project site, while all other education is provided in Ridgecrest. Road maintenance is provided by the governmental division (state, county, or city) otherwise responsible for each particular road. The Kern County Sheriff's Department provides law enforcement to the Randsburg area out of the Ridgecrest substation located about 25 miles to the north. Fire protection is provided by the Kern County Fire Department Station in Randsburg. Ridgecrest has an 76-bed hospital, three (3) medical clinics, 19 physicians/surgeons and one (1) ambulance service (RCC, 1993).

The existing RMC operations employ approximately 140 individuals as regular employees for the mining, leaching, technical and administrative duties at the existing RMC operations. This provides a total annual payroll of approximately $6,000,000.00 (Stillar, 1994). In addition, RMC pays approximately $200,000.00 per year in property taxes. Approximately $10,800,000.00 in operating and maintenance supplies are purchased from local vendors, and approximately $600,000.00 of power is purchased from the electrical utility. These jobs, and the amount of local expenditures, result in secondary economic benefits through increased local service employment. Using the BLM's mining employment multiplier for the California desert area of 2.666 (Anderson, 1989), approximately 373 secondary jobs have been created as a result of RMC's existing operations.

Mining and processing operations are conducted 24 hours per day, seven (7) days per week, 365 days a year. Most of the salaried staff works one (1) shift per day, five (5) days per week. Thirty-two (32) of the employees (approximately 25 percent) live locally, in the towns of Randsburg, Johannesburg and Red Mountain.

Eighty-seven (87) of the employees (approximately 65 percent) reside in Ridgecrest and commute to the mine site each day. The other 21 employees (approximately 15 percent) reside in other communities in the regional area and commute to the mine site each day. Because carpooling is prevalent in this area, there are approximately 40 trips per day between Ridgecrest and the other communities in the region and the project site. The traffic is spread over a 24-hour period. Currently, the use of U.S. Highway 395 between Ridgecrest and the project area is approximately 4,000 vehicles per day (Cannon, 1991). Traffic from RMC's existing operations is approximately 1.0 percent of the daily use of U.S. Highway 395.

4.13. Other Resources

The existing operations are not located: in or adjacent to wilderness areas or WSAs; in an area of prime and unique farmland; in a floodplain; on a wild and scenic river; or in an area of Native American religious concern.

CHAPTER 5
ENVIRONMENTAL CONSEQUENCES

5. ENVIRONMENTAL CONSEQUENCES

5.1. Proposed Action

5.1.1. Mineral Resources

Implementation of the Proposed Action would result in the removal of an additional 132 million tons of material during the extended operation of the project. In addition, the continued expansion of the open pits, waste rock stockpiles, heap leach pads and other project facilities may affect the development of other mineral resources in the immediate vicinity of the project area. The continued expansion of the open pits would allow for easier access to deeper mineralization and development of additional processing facilities may allow adjacent mineral occurrences to be mined economically. Conversely, placement on the land surface of the waste rock stockpiles and heap leach facilities may make other potential undiscovered mineral occurrences which may be located beneath these facilities inaccessible due to the increased material covering them; however, the portion of the project area where these facilities would be located has been explored and the likelihood of undiscovered mineral occurrences in those areas is low.

5.1.2. Physiography and Geology

The Proposed Action would permanently alter the topography of the project area, including the disturbance of approximately 511 acres and the removal of approximately 60 million tons of ore and 72 million tons of waste from the enlargement of the three (3) existing open pits and the new satellite pit. The Yellow Aster open pit would increase by 1,000 feet in length, 1,300 feet in width and 300 feet in depth. The Lamont open pit would increase by 1,800 feet in length, 300 feet in width and 140 feet in depth. The Baltic open pit would increase by 300 feet in length, 200 feet in width and 40 feet in depth. When mining is completed, the Yellow Aster open pit would be 4,400 feet in length, 3,000 feet in width and 800 feet in depth; the Lamont open pit would be 4,000 feet in length, 1,100 in width and 380 feet in depth; and the Baltic open pit

would be 2,400 feet in length, 1,500 feet in width and 440 feet in depth. The satellite open pit would be approximately 2,300 feet in length, 1,000 feet in width and 400 feet in depth. In total, the open pits, both existing (193 acres) and proposed (132 acres), would cover 325 acres. These changes are not considered significant.

Implementation of the Proposed Reclamation Plan as part of the Proposed Action for the project would result in the reclamation of the 511 acres disturbed under the Proposed Action and 62 acres of previous RMC disturbance from the Lamont and Descarga operations which are not now covered by a SMARA Reclamation Plan. In addition, as part of the Proposed Action, RMC has committed to conduct reclamation activities on 37 acres of historic surface disturbance in the vicinity of the Rand Project area, probably in the Rand or El Paso Mountains, at a site or sites to be determined in consultation with the BLM for which no party responsible for the reclamation now exists. This reclamation would follow at least Level Two guidelines, as discussed in the Proposed Reclamation Plan portion of the Proposed Action.

Although reclamation of the project area would occur, the ore and waste rock would be permanently removed from the open pits. The waste would be placed in the waste rock stockpiles and the ore would be placed on the leach pads. Once reclamation was completed on the project, new, permanent landforms, many with heights of over 200 feet above previous ground surface, would still remain. These impacts to topography are considered potentially significant.

The heap would have overall slopes of 2H:1V, and the waste rock stockpiles would be terraced with an overall slope at 2H:1V. The slope configurations for the heap would be similar to those used at the existing RMC facilities, and no significant slumping or slope failure at the facility is anticipated. The open pits would be constructed in igneous and metamorphic rock, and the pit walls would have 20-foot safety benches and overall slopes of 45 degrees. Previous experience by RMC at the existing open pits shows that this configuration is stable, and no significant slumping or slope failure of the enlarged pits is anticipated. The slope configurations for the waste rock stockpiles would also be similar to those used at

the existing RMC facilities, and thus no significant slumping or slope failure at the new facilities is anticipated.

The Proposed Action would create conditions which could potentially be affected by geologic hazards, which include seismic activity and slope stability. The project is located in an area of moderate seismic activity. If a seismic event did occur, the possible hazards would include horizontal and vertical ground accelerations and ground failure. The project facilities have been designed to meet or exceed building code requirements for earthquake safety applicable to the area. Appreciable ground shaking from blasting in the pits is expected to be localized to the project area. Based on the monitoring done in Randsburg for the Yellow Aster Mine and Red Mountain for the Baltic Mine, it is expected that the surrounding areas would experience no to minimal ground shaking as a resulting of continued blasts.

5.1.3. Soils

Impacts from the Proposed Action on the soil resources in the project area would result from disturbance of the soils during salvage operations, the burial of some soils by new facilities, increased erosion, and decreased soil biological activity. The Proposed Action would result in the disturbance of approximately 511 acres of soils. The loss of the soil resource would be minimized by the salvaging and stockpiling of the soil horizons. Approximately 687,000 cubic yards of soil, (equal to an average of ten (10) inches of soil over the 511 acres to be disturbed), would be stockpiled from the areas to be disturbed under the Proposed Action. Although the soil salvaging is directed towards removing and stockpiling all soil "A" horizons (which range from 0 to six (6) inches in thickness) from the areas to be disturbed, there would still be between seven (7) and 37 inches of soil material (mostly "B" and "C" horizons, but possibly some "A" horizon) that would not be salvaged and either combined with waste material in the waste rock stockpiles or covered by the construction of the heap leach facilities and waste rock stockpiles. These losses are not considered significant.

Some minimal erosion of the residual soils in disturbed areas is expected from surface runoff and precipitation events prior to the completion of reclamation of these areas. In addition, wind erosion would also likely occur. However, RMC would water and or apply a palliative, such as sodium lignosulfonate, to all active project operation areas, which would minimize the amount of wind erosion.

Soil biological activity would be substantially reduced or eliminated during stockpiling as a result of anaerobic conditions and/or compaction within the deeper portions of the stockpiles. After reclamation and redistribution of the stockpiled soils has occurred, soil biological activity should begin to return and in the long term develop to pre-salvage levels.

After reclamation of the project, erosion in an amount greater than the normal losses from erosion of undisturbed areas is expected. Using the Revised Universal Soil Loss Equation (RUSLE), a slope of 2H:1V would have erosion losses in the range of 3.0 to 4.1 tons per acre per year. However, it can be anticipated that soil erosion losses in the project area would decrease over time as vegetation density increased. These erosional losses are not considered significant.

5.1.4. Hydrology

5.1.4.1. Surface Water

The Proposed Action would result in surface disturbance within the high-order drainages that trend both southeast towards the Cuddeback Lake area and northwest towards the Fremont Valley. As a result of these activities, an additional approximately 538 acres would become internally drained during the operational life of the project. This would be an approximate 30-percent decrease in the area subject to surface water runoff from the project area. However, following the completion of reclamation, only the approximately 132 acres of the expanded pits would be internally drained, and all of the remaining surface areas would continue to produce surface runoff as before, resulting in an insignificant change in surface runoff.

The disturbance to waters of the United States from the Rand Project would be substantially less than ten (10) acres, and RMC has been informed that the project is not subject to the requirements of the stormwater discharge permit system.

Some increase in sedimentation in these drainages would result from activities in the non-internally drained areas; however, this would be more than offset by the decrease in sedimentation to these drainages due to the increase in internally drained areas. This increased sedimentation would be from the waste rock stockpiles, the topsoil stockpile and roads. The small drainages upstream of the open pits would be rerouted around the pits. The surface flows on the heap leach facilities would be controlled and retained for evaporation. Surface flows upstream of the heap leach facilities would diverted around the facilities via ditches. Because of the implementation of the runoff control measures and concurrent reclamation, proposed as part of the Proposed Action, it is anticipated that there would be only a minimal increase in sedimentation of ephemeral surface waters as a result from implementation of the Proposed Action.

Surface flows (runoff) from the unreclaimed waste rock stockpiles would be less than that from the reclaimed waste rock stockpiles due to the greater infiltration rates of the unreclaimed waste rock. Runoff from the heap leach areas would be captured and not allowed to enter the surface drainage system until after neutralization and reclamation. The open pits are areas of internal drainage, and all waters within the pits would collect and either evaporate or infiltrate. Neutralization of process facilities fluids prior to facility closure would minimize the possibility of leaching chemicals from those fluids into surface waters.

If a greater than 100-year/24-hour storm event occurs, simultaneously with a 24-hour power outage, flows from the heap leach facilities could exceed the design capacity of the ponds. This could result in the discharge of solution from the ponds into the drainage in the Lamont Valley area and eventually flow into the Mohr Pit, where the solution would likely collect and infiltrate.

In the Descarga area the discharge would be into a small drainage just west of Randsburg, which eventually flows into Fiddler Gulch (Figure 2-9). The total water holding capacity of both heap leach facilities is somewhat less than the quantity of water that would enter the facilities from a 1,000-year storm event. If, in the extremely unlikely possibility of a 1,000-year storm event occurring simultaneously with a 24-hour power outage, approximately 7.3 acre-feet of diluted process fluid would be released from the Lamont Valley heap leach facility into the drainage in the Lamont Valley, and approximately 1.6 acre-feet of diluted process fluid would be released from the Descarga heap leach facility into the drainage west of Randsburg. The cyanide concentration of that fluid would be equal to the concentration of cyanide in the operating solution as diluted by the storm waters, which would be a maximum theoretical cyanide concentration of approximately 42 ppm. However, in reality the concentration would be approximately 14 ppm because of the pH change that would occur in the fluid as it was diluted by the storm meteoric water, causing much of the cyanide to be released and diluted in the atmosphere. In addition, as the fluid was released from the ponds it would flow into storm waters generated by the 1,000-year event, further diluting the cyanide concentration. Therefore, within a short distance of the facility the cyanide concentration in surface waters would probably be significantly less than one (1) ppm. This is considered an insignificant potential impact.

5.1.4.2. Groundwater

In the Fremont Valley, impacts to groundwater would be associated with the production of water from the groundwater wells. RMC currently pumps an average of 400 gpm (576,000 gpd), for the Yellow Aster-Descarga, Lamont and Baltic operations. For the Rand Project, groundwater pumpage is projected to decrease to an average of 345 gpm (496,000 gpd) during the 16-year period beginning in 1995. The proposed groundwater production rate would be greatest during the first 11 years of the Rand Project (1995 to 2005), with an average annual pumping rate of approximately 450 gpm (648,000 gpd). The maximum average estimated production rate during this phase would be approximately 500 gpm (720,000 gpd). Groundwater production is proposed

to decrease during the last five (5) years of the Rand Project (2006 to 2010), at which point the pumping rate would average 110 gpm (158,000 gpd).

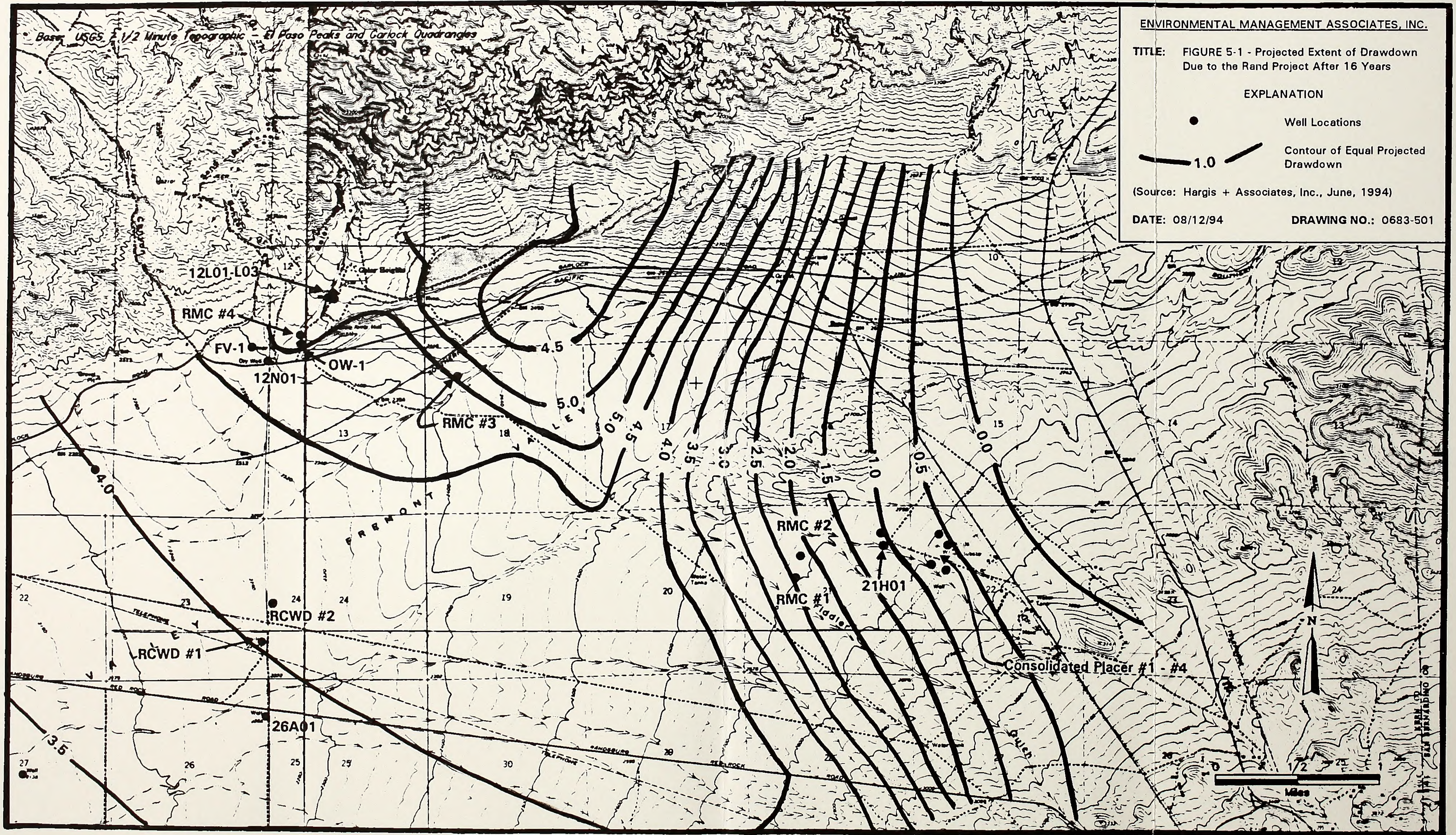
As described in Chapter 4, groundwater modeling was performed to evaluate the impact of the Rand Project on groundwater conditions and vegetation in the northern Fremont Valley in general, and the RCWD wells in particular (Hargis + Associates, 1994). The modeling assumed that the groundwater production factors listed above for the Rand Project occurred 24 hours per day and 365 day per year. Modeling Case 2, which did not include the influence of regional wells, indicated a water table decline in the vicinity of well RMC #4 after 16 years of approximately 5.3 feet (see Table 5-1 and Figure 5-1). In the vicinity of the RCWD wells, approximately 2.0 miles to the south of well RMC #4, a predicted drawdown of 4.1 feet after 16 years would occur from pumping of the RMC wells alone. Because there is approximately 70 feet of water above the pumps in each RCWD well, the predicted water table declines associated with the Rand Project should not significantly affect production from the RCWD wells.

Table 5-1: Results of Northern Fremont Valley Groundwater Modeling - Case 2

Model Run[1]	Drawdown in the vicinity of RMC #4 (feet)			Drawdown in the vicinity of RCWD Wells (feet)		
	6 yr	12 yr	16 yr	6 yr	12 yr	16 yr
Case 2 - Proposed Rand Production	19.6	15.1	5.3	4.7	5.8	4.1

[1] Hargis & Associates, Inc., June, 1994

The difference in projected water level responses for the model Cases 1 and 2 (without and with the pumpage associated with the Rand Project, respectively) was used to provide a comparison of the water level impacts at the end of the existing mining operation versus those modeled at the end of the Rand Project. The difference in projected drawdowns due to the Rand Project pumpage is approximately 16.8 feet in the vicinity of well RMC #4 and 3.4 feet in the vicinity of the RCWD wells after six (6) years (Figure 5-2). The maximum difference in projected drawdowns due to the Rand Project


Base: USGS 7 1/2 Minute Topographic - El Paso Peaks and Garlock Quadrangles
ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 5-1 - Projected Extent of Drawdown Due to the Rand Project After 16 Years
EXPLANATION
Well Locations
1.0
Contour of Equal Projected Drawdown
(Source: Hargis + Associates, Inc., June, 1994)
DATE: 08/12/94
DRAWING NO.: 0683-501
12L01-L03
RMC #4
FV-1
OW-1
12N01
RMC #3
RMC #2
RMC #1
21H01
RCWD #2
RCWD #1
26A01
Consolidated Placer #1 - #4
FREMONT
4.5
5.0
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
N
Miles
0
1/2
1

ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.

TITLE: FIGURE 5-2 – Cross-section of Projected Drawdown due to Rond Project Pumpage Versus Current Pumpage

EXPLANATION

▽ Woter Toble

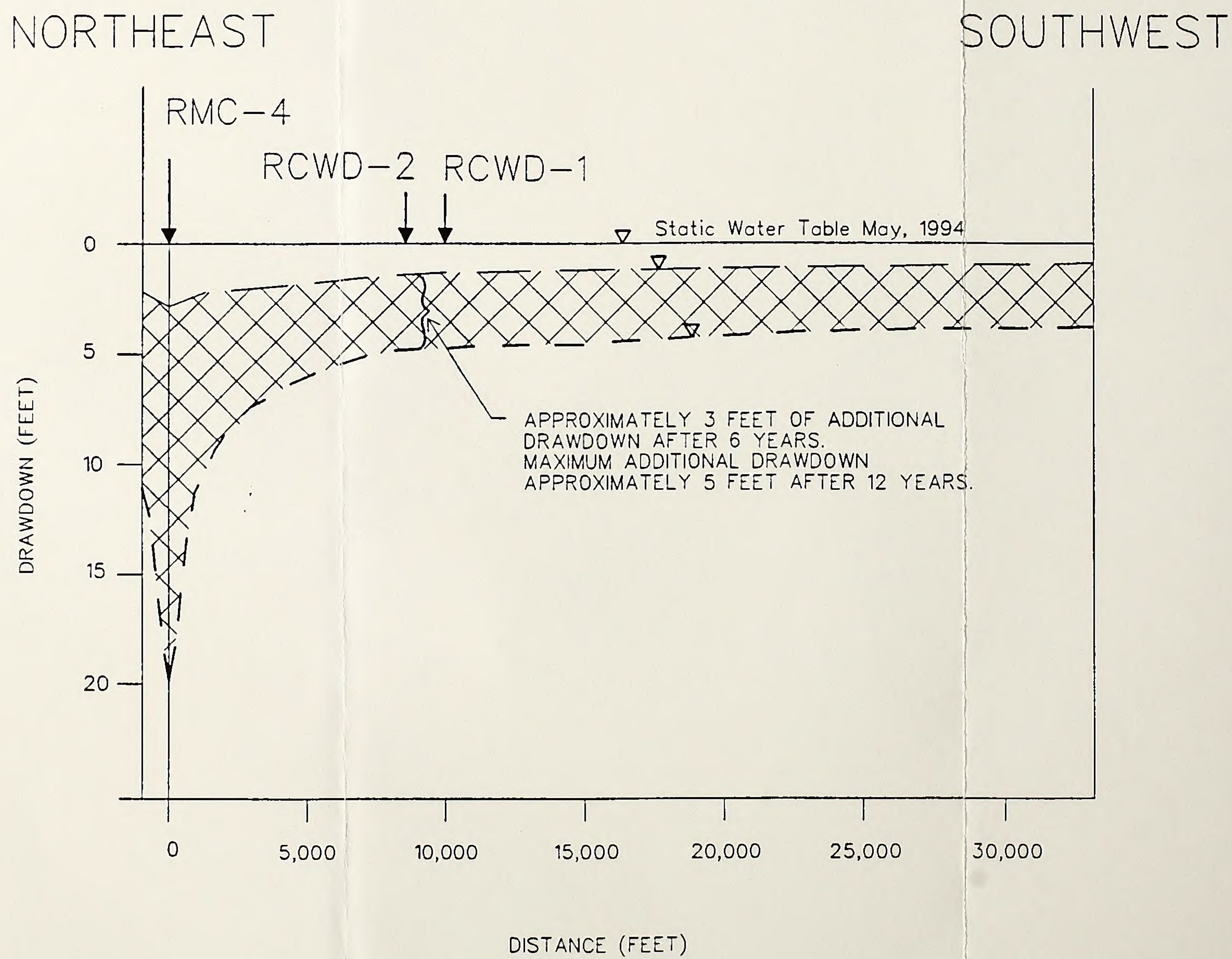
— — — Projected drawdown ofter 6 yeors without increosed pumpage due to Rond Project (Model Case 1)

— — — Projected drawdown ofter 6 yeors with increosed pumpage due to Rond Project (Model Case 2)

[crosshatch] Additionol drowdown coused by increosed RMC pumpage

Note: Projected drowdown bosed on Modflow Model results for Production Well RMC-4 pumping olone.

DATE: 06/27/94 DRAWING NO.: 0683-501



(Source: Hargis + Associates, Inc. June, 1994)

pumpage in the vicinity of the RCWD wells is approximately 5.3 feet after 12 years. These drawdowns resulting from the Rand Project production of groundwater are not considered significant

The RMC consumption of groundwater is considered a temporary, although potentially significant, use because of the limited time frame of the project. Impacts to groundwater in conjunction with other operations in the area are discussed further in Section 9.6.2, Cumulative Impacts to Groundwater, of this EIS/EIR.

Modeling of water quality impacts in the Fremont Valley using the PATH3D particle tracking model code indicated that the amount of estimated migration of the 500 mg/l TDS contour as a result of pumping of the water for the Rand Project, on the order of 1,000 feet, is minor, and no discernable migration of the contour in the northeastern portion of the Fremont Valley was observed in the model simulation results. Since the groundwater levels in the vicinity of the RCWD wells are higher than the groundwater levels near Koehn Lake, the groundwater gradient is towards the lake, not towards the RCWD wells, and higher salinity water in the vicinity of the lake would not tend to move toward the RCWD wells. Since modelling of the pumpage of water for the Rand Project from well RMC #4 shows that this gradient is maintained, the Rand Project pumpage should not adversely affect the groundwater quality in the vicinity of the RCWD or other production wells.

The Proposed Action could potentially degrade the quality of the identified or any unknown groundwater in the project area through the infiltration of leachate from the waste rock stockpiles, the seepage or spillage of cyanide solution from the heap leach facilities into the groundwater, or the infiltration of collected waters in the bottom of the open pits. However, the potential for any of this occurring is considered low.

RMC estimates that during a 100-year storm event of 3.57 inches of precipitation in 24 hours, approximately 1,900,000 cubic feet (about 44 AF) of rainwater could enter the Yellow Aster Pit at its maximum configuration,

reaching a maximum depth of 18 feet; 880,000 cubic feet (19 AF) would enter the Baltic Pit, reaching a depth of 5 feet; 880,000 cubic feet (19 AF) would enter the Lamont Pit, reaching a depth of 7 feet; and 530,000 cubic feet (12 AF) would enter the Satellite Pit, reaching a maximum depth of 4 feet. Based upon likely infiltration and evaporation rates, water would be expected to remain in the pits for less than one month. Recent laboratory tests of the ore and the material which would be disposed of in the waste rock stockpiles have shown that the material has a low potential to form an acidic leaching solution with elevated levels of heavy metals (see Section 4.4.1). The heap-leach facilities are designed, and would be constructed and operated, under an approval from the CRWQCB-LR to further minimize the potential for spillage or seepage to any groundwater.

5.1.5. Air Quality

The primary impact to air quality from the Proposed Action would be particulate emissions (fugitive dust) from mining and ore processing operations. In addition, there would be some hydrocarbon and air toxics emissions from the operation of mining, ore processing and construction equipment.

Fugitive dust emissions would be generated from surface disturbance during construction activities and travel on unpaved roads by vehicles and construction equipment during construction and mining operations. Increased surface disturbance during construction would increase fugitive dust emissions which would, in turn, cause an increase in PM_{10}/TSP concentrations. Using the fugitive dust emission factor for newly disturbed surfaces associated with construction presented in EPA publication AP-42 "Compilation of Air Pollution Emission Factors", an estimate of the amount of fugitive dust generated by the new construction and associated surface disturbance under the Proposed Action can be calculated (EPA, 1985). Assuming the EPA-published emission factor of 1.2 tons of TSP per acre per month for an active construction site, approximately 80 pounds of TSP would be emitted per acre disturbed per actual day of construction activity. This emission rate could be reduced by a minimum of 50 percent (to approximately 40 pounds of TSP per acre per actual day of

construction activity) by applying water spray and/or chemical treatment as a dust control measure, according to EPA AP-42. Assuming that 75 acres of the project would be disturbed for construction activities an average of 20 days, the total fugitive dust emissions, after the use of dust control measures, would be 30 tons of TSP. These emissions would occur during the initial months of the project, while construction activities are occurring.

WZI, Inc.'s estimate of the PM_{10} emissions from the Rand Project is provided in Appendix F. Table 5-2 is a summary of the calculated maximum hourly and annual PM_{10} emissions from the proposed Rand Project operations. Since the existing RMC mining operations and the proposed Rand Project mining operations do not require either crushing or screening of the ore prior to placement on the heaps, all of the significant PM_{10} emissions result from these same fugitive sources (drilling, blasting, loading, hauling, dozing, and wind erosion). Because the proposed process rate for the Rand Project is the same as the process rate for the existing RMC operations, the maximum annual and hourly PM_{10} emission rates should also be similar.

The primary sources of PM_{10} fugitive emissions during reclamation activities include the loading and unloading of topsoil, bulldozing, road emissions, and erosion from disturbed surfaces before vegetation is established. These emissions should be relatively minor compared to the operational emissions, and would be very similar to the emissions from reclamation of the existing projects, only occurring over a longer period. Sources of fugitive dust emissions after the first year of final reclamation would primarily be reclaimed surfaces with recovering vegetation, with emissions declining as vegetation is established.

Table 5-2: Estimated PM_{10} Emissions From the Proposed Action (1998)

FUGITIVE PM_{10} EMISSION SOURCE	ESTIMATED PM_{10} EMISSIONS		
	MAXIMUM POUNDS/HOUR	POUNDS/YEAR	TONS/YEAR
Ore Drilling (1001)	0.395	657	0.33
Waste Drilling (1001)	0.485	985	0.49
Ore Blasting (1002)	1670	149,000	74.50
Waste Blasting (1002)	1670	222,000	111.00
Truck Loading Ore (1003)	13.3	46,000	23.00
Truck Loading Waste (1003)	0.485	2,520	1.26
Hauling (1004)	2.10	11,600	5.80
Ore Dozing (1005)	12.2	3,260	1.63
Waste Dozing (1005)	33.3	13,300	6.65
Waste Wind Erosion (1006)	13.6	119,000	59.50
TOTALS	N/A	568,322	284.16

WZI Inc. prepared a supplemental assessment of the potential PM_{10} impacts of the Rand Project, including the existing RMC operations, at five (5) local sensitive receptor locations (Randsburg, Johannesburg, Johannesburg School, Red Mountain, and Dog Patch) (Appendix F). Table 5-3 summarizes the estimated maximum 24-hour average PM_{10} concentrations anticipated by the implementation of the Proposed Action at these locations. Although the proposed process rate for the Rand Project is the same as the process rate for the existing RMC operations, the majority of Rand Project ore and waste rock would be placed on the proposed Lamont Valley heap leach and waste rock stockpile, which are located more than one and one-half (1½) miles south of the town of Randsburg and the same distance west of the San Bernardino County line. Because these facilities are located much further from the local residents than the existing RMC facilities, local residents should perceive substantially less in the way of air quality impacts from these facilities than from the existing facilities. Implementation of the Proposed Action would also extend the life of this air quality impact for an

additional nine (9) to ten (10) years over the existing projects, which would result in the mine operating for approximately 12 years, or until approximately 2006, although reclamation activities would then continue until the year 2012.

Table 5-3: Maximum Estimated 24-Hour PM_{10} Impacts From the Proposed Action.

LOCATION	UTM COORDINATES		CONCENTRATION ($\mu g/m^3$)
	EAST	NORTH	
Randsburg	440,500	3,913,930	17.9
Johannesburg	442,500	3,914,375	11.9
Johannesburg School	442,440	3,913,840	11.9
Red Mountain	444,000	3,912,625	10.6
Dog Patch	442,356	3,911,329	31.3
Dome Wilderness Class I Airshed	394,000	3,953,000	0.57
Death Valley Class I Airshed	492,000	3,972,000	0.54
Red Mountain Wilderness Study Area	445,400	3,914,000	9.20
Golden Valley Wilderness Study Area/Wilderness	447,100	3,916,850	4.54

As with the existing RMC projects, implementation of the Proposed Action would result in the emission of various air toxics, including metals from handling of the ore and waste rock, hydrogen cyanide from the leaching solution, and organic gases and some metals from the diesel engines used for pumping water and the gas-fired furnace. WZI, Inc.'s assessment of the air toxic emissions from the Proposed Action is also presented in Appendix F. WZI, Inc.'s calculations indicate that the maximum estimated excess cancer risk from the Proposed Action at any of the population areas near the project area is 0.0000028, or approximately 2.8 additional cases of cancer per one (1) million population, at Randsburg. This is an increase from the estimated maximum cancer risk of 0.00000067, or 0.67 additional cases of cancer per one (1) million population, from the existing RMC project emissions. However, this is still an extremely small increase in the risk of cancer for the general population of the United States (which is 0.333, or 333,333 additional cases of cancer per one (1) million population), and is at a level which the KCAPCD still defines as not significant.

As a result of the natural degradation of sodium cyanide, hydrogen cyanide gas is generated. Ongoing monitoring for hydrogen cyanide at the Yellow Aster Mine Project includes sampling the heap leach pad and pond and the ambient weather conditions. This monitoring indicates that the hydrogen cyanide concentrations are consistently less than or equal to 4.7 ppm, which is significantly less than the ten (10) ppm threshold limit/time-weighted average for a normal 8-hour work day established by the OSHA for sustained breathing of gaseous HCN, and significantly less than the State of California 11 ppm threshold. Levels from the Rand Project are anticipated to be essentially identical.

The Rand Project is not subject to the EPA's New Source Performance Standards (40 CFR 60.386-60.388), principally since no crushers, screens or loading stations are used by the Proposed Action (nor the existing RMC projects).

Because essentially all of the PM_{10} emissions from the Proposed Action are fugitive emissions, the Proposed Action is not subject to PSD regulations. However, WZI, Inc.'s assessment of the PM_{10} emissions from the Rand Project (Appendix F) included an assessment of the impact to the existing Class I airshed located within 100 kilometers of the proposed project area, as well as Death Valley National Park and Golden Valley Wilderness. Table 5-3 lists the estimated maximum 24-hour average PM_{10} concentrations anticipated by the implementation of the Proposed Action, including the existing RMC operations, at the Class I airshed, Death Valley National Park and the Golden Valley Wilderness. As can be seen, the impacts to the Class I airshed, Death Valley National Park and the Golden Valley Wilderness fall well below the maximum permissible increase of 10 $\mu g/m^3$ (24-hour maximum) allowable in a Class I airshed under PSD regulations, even if RMC's operations were subject to this limitation, which they are not.

5.1.6. Vegetation and Range Resources

5.1.6.1. Vegetation Communities

Implementation of the Proposed Action would disturb approximately 511 acres of vegetation, primarily creosote bush scrub community. With the exception of the 132 acres of proposed open pit area (which is partially compensated by RMC proposed reclamation of 37 acres of historic surface disturbance that would not otherwise be reclaimed), this impact would be temporary, until the completion of reclamation activities. In the long-term, successful reclamation utilizing regrading, topsoil placement and revegetation, all in accordance with the Proposed Reclamation Plan, is expected to result in an insignificant impact to vegetation communities. The redistribution of topsoil undertaken in association with reclamation activities would result in thinner, mixed soils which may favor the support of plant species with shallow roots, such as grasses and forbs. As a result of the surface disturbance, it is expected that there would be natural re-colonization of the area by surrounding species. Of the colonizing species, R-selected species, including "invader species", would initially develop in the recently disturbed areas. However, as the area became more established, K-selected species would then become established in the area.

As part of the Proposed Action, RMC would transplant the juvenile, non-articulated Joshua trees, Golden cholla and Beavertail which are located in areas to be disturbed. RMC would also try to avoid the removal of Joshua trees, Golden cholla and Beavertail during construction, operation and reclamation activities. This would minimize impacts to these species to insignificance, although some individual plants will most likely be lost. No impacts to Red Rock Poppy found in Section 1, Township 30 South, Range 40 East, MDB&M, are expected to occur as a result of the proposed expansion of the Baltic Mine under the Rand Project. The plants are found outside of previously or proposed areas of disturbance, and represent a narrow distribution within the project area as a whole. No impacts to any known

endangered, threatened, rare or sensitive plant species are anticipated from the implementation of the Proposed Action.

Although limited, current information indicates that the extraction of groundwater for and by the Proposed Action, combined with the water extracted for the ongoing RMC operations, as predicted in the geohydrologic model, would result in lowering of the watertable in the area around well RMC #4 by as much as 19.6 feet. However, the depth to the water table in the area that would be affected by the additional water table decline (approximately 350 feet bgs) is already significantly below the root depth of the species which inhabit that area (Hargis + Associates, 1994). Thus, no impact to vegetation resources in the Fremont Valley is expected from the pumping.

5.1.6.2. Range Resources

The Proposed Action would result in the disturbance of approximately 511 acres of vegetation within the Cantil Common Allotment. In addition, the project area would be fenced during the construction, operation and reclamation of the project area, which would limit grazing access to a total of approximately 2,520 acres for approximately 16 years. Based on the range of grazing capacity of the allotment, this removal of 2,520 acres would temporarily remove between approximately 250 and 6,300 tons of forage per year from potential use (although grazing has not been permitted on this portion of the Cantil Allotment since 1989 because of the drought and tortoise restrictions). Because the reclamation seed mixture for revegetation does not include annual species, the post-reclamation forage production would likely be less than current rates. With the exception of the permanent removal of approximately 130 acres for the open pits from future forage production, there would be no other post-reclamation impacts on range resources such as fences, gates or water improvements.

5.1.7. Wildlife Resources

The following section evaluates the potential impacts of the Proposed Action on wildlife. The identified wildlife issues are: (1) reduction of wildlife habitat associated with surface disturbance; (2) potential exposure of wildlife to reagents and processing solutions; (3) introduction of artificial lighting; (4) increased noise levels and human presence; and (5) traffic-related impacts. Impacts to wildlife would be considered significant if any of the following were to occur:

- Substantial disturbance of threatened or endangered wildlife species, or a species likely to become threatened or endangered in the foreseeable future (e.g. federal Category 1 species);
- Substantial disturbance or destruction of habitat that supports threatened or endangered wildlife species, or a species likely to become threatened or endangered in the foreseeable future;
- Substantial interference with the movement of resident or migratory wildlife species;
- Substantial reduction of habitat for a wildlife species; or
- Substantial number of mortalities of wildlife, including migratory birds.

Implementation of the Proposed Action would result in the destruction of approximately 511 acres of primarily creosote bush scrub habitat, resulting in a direct impact to the wildlife in the area. With the exception of the pit areas and portions of the heap leach pads, the habitat loss would be temporary, lasting until the completion of reclamation. Additional direct impacts to wildlife, such as death or injury, would occur due to traffic-related activities. In addition, an indirect impact could result from wildlife avoiding the project area during operations, thus temporarily removing additional areas from available wildlife habitat surrounding the project. Wildlife within these areas of indirect impact would typically be displaced to adjacent areas due to project exploration activities, facility construction and operation of the project, all of which would increase existing levels of noise, artificial lighting and human activity. This indirect impact to the

wildlife would occur over an area estimated to be approximately 2,500 acres, which includes all the areas between the existing and proposed project facilities and an area-of-influence buffer. Because the extent of existing operations within the Rand Project area, much of this indirect impact has been occurring since the mid-1980's, but would be enlarged to 2,500 acres and extended in time as result of the Proposed Action. Loss of displaced wildlife is anticipated, and although there is insufficient data to quantify the impact, it is anticipated to be not significant.

Because groundwater levels in the Fremont Valley are far below the root zone, no impact to desert tortoise habitat or the desert tortoise in Fremont Valley is expected from the additional production of groundwater.

The proposed use of netting over the process water ponds would limit impacts to any migratory or non-migratory birds. The use of netting over solution ponds by other gold mining companies utilizing cyanide in the western U.S. has proven effective in excluding migratory birds. However, impacts to wildlife resulting from cyanide ingestion is not limited to solution ponds, but includes pooling/puddling on top of heap leach pads and in drainage/collection channels. Ponding/pooling of leach solution on the top of the heap leach pads is not anticipated, but may occur, allowing wildlife the ability to ingest the solution. Ingestion of cyanide solution by wildlife can result in death. Animals seeking water could be attracted to exposed processing solution, creating a potential hazard for terrestrial and avian wildlife. Migratory bird mortality through cyanide toxicosis may be prevented at heap leach extraction facilities through the initial design of structures which deny birds access to toxic solutions.

Mohave ground squirrel is known to occur in the project area. However, the actual number of individuals present can not be determined with accuracy. Assuming an average density of between 15 and 20 individuals per square mile, then approximately 12 to 16 individual Mohave ground squirrels could be present within the 511-acre area that would be disturbed by the Proposed Action (Rado, 1993a and 1993b). Impacts to the Mohave ground squirrel is not considered significant.

Myotis sp. and Townsend's big-eared bats have been observed in the vicinity of the Yellow Aster, Lamont and Baltic operations. As a result, activities to be conducted under the Proposed Action, such as the filling of the open shafts in the project area, could impact any bats that may reside in the shafts. However, because the two (2) shafts which field surveys indicated contained the greatest number of bats would not be directly affected by the Proposed Action, little direct or indirect impact to these bat species is expected.

Potential impacts to wildlife could occur from the use of sprinklers on the slopes of the heap. Avian species flying through the mist created during the sprinkler operation and then immediately preening their feathers could result in the ingestion of cyanide-containing solution. In addition, avian species or small rodents could ingest cyanide-containing solution by standing on the slopes of the heaps in the mist, or bathing or drinking in any small puddles which could form on the slopes. The design for the slopes of the Rand Project heap, including the use of sprinklers, is the same as currently used at the adjacent Yellow Aster and Baltic heap leach facilities. Monitoring of these heaps are conducted by walking the heaps daily. Since operations began at the Yellow Aster Mine in 1990 through the second quarter of 1993, an average of approximately nine (9) wildlife mortalities have been observed annually. It is anticipated that the rate of wildlife mortalities at the RMC projects will increase with the expansion resulting from the Proposed Action. One (1) mortality to a known sensitive species, prairie falcon (*Falco mexicanus*), has assumed to have occurred as a result of mine operation activities. These impacts are not considered significant.

5.1.8. Cultural and Paleontological Resources

5.1.8.1. Cultural Resources

Of the 213 sites present within the project area, 74 would be partially or completely impacted by the Proposed Action. However, due to the poor condition of these sites and the limited amount of data they possess, the BLM has determined that none of these sites meet the criteria for inclusion to the National Register of Historic Places. While the remaining 139 sites will not be

affected by the proposed development, they are also considered ineligible for inclusion to the National Register of Historic Places.

5.1.8.2. Paleontological Resources

Because there are no known paleontological resources in the project area, there would be no impact to paleontological resources as a result of implementation of the Proposed Action.

5.1.9. Visual Resources

Impacts to visual resources from the Proposed Action would result from the visibility of surface disturbance associated with construction and operation of project facilities; the creation and expansion of the new waste rock stockpiles; the creation and expansion of the heap leach facilities; the expansion of the open pits; and the dust plumes created from blasting in the open pits for an additional nine (9) to ten (10) years. The leach pad, waste rock stockpiles and access road construction as part of the Proposed Action would represent a visual contrast for viewers in the proximity of the project. However, the proposed project would not alter the existing appearance to the casual viewer because the type of activities outlined in the Proposed Action are consistent with past and present activities in the area.

Implementation of the reclamation plan would reduce some of the impacts associated with the surface disturbance over the long term. Following completion of the operation, the access roads constructed under the Proposed Action would be recontoured and seeded. The waste rock stockpiles would not be recontoured, but would be seeded and would ultimately resemble a stepped mesa. This would minimize the contrast of color and lines that exists from the current situation and which would be created by the mining under the Proposed Action. The open pits, waste rock stockpiles and heap leach piles would remain as a permanent change to the line and form of the area.

The level of impact to visual resources would depend upon the number of viewers of the project, the viewers' observation point, the compatibility of the operations with the BLM's visual management objectives, and the duration of the disturbance. Visual effects of the Proposed Action were analyzed using the standard procedures in Section 8400 of the BLM Manual. The form of the reclaimed project would approach the smooth, rounded character of the surrounding landscape, but would continue to have some areas with a conical form. The line of the reclaimed project would approach soft and undulating, but would remain discontinuous and have some areas with an angular line. The color of the reclaimed project would approach that of the surrounding landscape. These visual impacts are considered potentially significant.

Accordingly, operations under the Proposed Action would have some visual contrast with the surrounding land even after reclamation. However, when the Proposed Action is viewed in relationship to the other current and historic activities in this part of the Rand Mountains, there is only a weak contrast. The project area, with the implementation of the Proposed Action, would contrast only slightly with the existing situation when viewed from each of the KOPs (see Appendix J). Two (2) photographic visual simulations were prepared to illustrate the visual contrast of the proposed action with currently approved operations (Photograph J-3 and Photograph J-6). The two (2) photographs show an enlargement of the Yellow Aster and West Valley waste rock stockpiles and the three (3) open pits. In addition, the photographs show the creation of the new Lamont Valley heap leach and waste rock stockpile, and the satellite open pit.

The project area would be visible from only two (2) of the wilderness areas designated under the CDPA; the Golden Valley Wilderness and the El Paso Mountains Wilderness. These wilderness areas are located at a distance from the project area of 2 and 10 miles, respectively. Visibility of the proposed project operations from these two (2) wilderness areas would be limited and not substantially different from that of the existing operations.

5.1.10. Noise

The construction and mining operations proposed to be conducted under the Proposed Action would be continuing sources of noise for the life of the project. These operations would be essentially identical to those currently occurring at the existing operations and would produce essentially identical noise levels, with some locational differences, over a longer time period. The noise generated by these operations would be typical of most construction and mining projects and could be intense, up to 95 dBA at 25 feet. Blasting could cause very short-duration noise levels in excess of 100 dBA at 25 feet. Assuming an average reduction of six (6) dBA when the distance from a noise source is doubled, the impacts to the nearest residences, which are approximately 500 feet east of the Descarga heap leach operations, could be in the range of 63 to 76 dBA adjacent to the outside of the residential structures, and could be in the range of 60 to 65 dBA adjacent to the outside of the residential structures located approximately 1,500 feet north of the proposed Yellow Aster open pit expansion. This would be a maximum noise level, because as operations progress, a majority of the equipment operations and blasting would occur below grade in the open pits. The walls of the pits would absorb some of the noise and tend to direct the rest of the noise upward, thus reducing the noise levels at the residences. This would be consistent with the over-pressure (air vibration or shock wave) monitoring conducted in Randsburg for the Yellow Aster Mine Project. Some residents of the area, such as those in Randsburg, Dog Patch and Red Mountain, and some recreational users, would likely be affected by blasting noise, but construction and operational noise would likely result in at most minimal impacts to the human environment. In addition, blasting may be heard at the Golden Valley Wilderness under some atmospheric conditions.

As discussed above in Section 5.1.7, wildlife populations may be affected by noise from the construction or mining phases of the Proposed Action, and would likely avoid the area during the life of the project. However, these impacts are not considered significant.

5.1.11. Land Use and Wilderness

5.1.11.1. Land Use Classifications

The Proposed Action would be compatible with the existing land uses in and around the project area. Also, the Proposed Action would be consistent with the current Kern County land use designation for the project area. The proposed project would be consistent with the BLM's regulations and the California Desert Conservation Area Plan and amendments. That portion of the project which is located on BLM-administered land is located in a Class M, Moderate Use area.

A maximum of approximately 511 acres of land would be cleared for this project. Land use impacts from the proposed project would include restricted public access in the proposed project area. Also, these lands currently available for grazing would be committed to mineral development for the life of the project. These effects on grazing would be short-term, lasting only until the disturbed areas have been reclaimed; however, access to the pit areas would be permanently restricted for safety reasons. The Western Rand ACEC would not be impacted by the Proposed Action.

The Proposed Action is consistent with the past use of the land for mineral development, in addition to other uses. Some of the pre-existing hazards in the form of open shafts, pits, cuts and trenches would be eliminated as a result of the Proposed Action. This action is consistent with the multiple use class designation for the area under the CDCA Plan. This action is also consistent with the existing county zoning and land use designation for the area.

No buildings or other structures over 150 feet tall would be constructed by the proposed action. Waste rock stockpiles may eventually be piled higher than 150 feet above preexisting ground surface, but would be no higher than the surrounding ridges and should pose no hazard to low-flying aircraft since they would be identified by aircraft radar as normal extensions of the ground surface. Low-flying military aircraft could potentially impact fly rock from the

blasts if the aircraft happened to fly over the pit at the exact time of the blast. This potential impact is not considered significant.

5.1.11.2. Road System

Access to Randsburg from Government Peak would be changed by the closing of the undesignated roads in Section 34 with the expansion of the West Valley Waste Rock Stockpile and the fencing of the entire project area, except for BLM Route 85 (see Figure 4-11). To compensate for the potential limitation in access to Government Peak and the Sunshine Mine area, RMC proposes to construct two (2) spur access roads, one (1) to change the alignment of BLM Route 85 in the southwestern portion of the project area, and another to come off of BLM Route 24 and provide direct access to the Sunshine Mine area. These two (2) spur roads would add approximately 1.0 acres of route-related disturbance, an impact which is not significant.

The Proposed Action would directly affect the road system network outside of the project area of operations by eliminating an additional 8.25 to nine (9) miles of route network. This additional mileage would be eliminated from the loop network and result in these routes becoming spur routes leading to closed gates or fences. Total trail mile impact is estimated to be approximately 13.5 to 14.25 miles out of a network of 135 miles. This would result in a loss of 10 to 15 percent of the area's current road network. The loss would occur after significant network reductions enacted by the Rand Mountains/Fremont Valley Management Plan, which had previously reduced the trail network by 630 percent. However, RMC, in coordination with the BLM, would construct new portions of the loop access route under the BLM transportation system from Government Peak to Randsburg, which would eliminate the primary impact resulting from the fencing of the entire project area. The resulting impacts are not considered significant.

5.1.11.3. Recreation Resources

A maximum of approximately 511 acres of land would be cleared for this project and approximately 2,520 acres would be fenced. Recreation impacts from the proposed project would include restricted public access for recreation in the proposed project area. This would result in a loss of ten (10) to 15 percent of the area's current total OHV trail opportunities. The loss of riding opportunities would occur after significant network reductions enacted by the Rand Mountains/Fremont Valley Management Plan, which had previously reduced the trail network by 630 percent. In addition, the potential reduced access to Randsburg by OHV recreationists represents the potential loss of a primary recreation/service destination. These effects on recreational use would generally be short-term, lasting only until the disturbed areas have been reclaimed; however, access to the pit areas would be permanently restricted for safety reasons. OHV casual use would be impacted due to the road and route closures within the project area. These impacts are not considered significant.

5.1.11.4. Wilderness

Impacts to designated Wilderness and WSAs are limited to air quality, noise, and visual effects, which are specifically discussed in Section 5.1.5., Air Quality; Section 5.1.10, Noise; and Section 5.1.9., Visual Resources; respectively. The visibility impacts would be limited to views of the expansion of the existing Yellow Aster highwall and the North waste rock stockpile. Air quality impacts would be limited to very minor increases in PM_{10} concentrations in the wilderness areas and WSAs. Noise-related impacts would be essentially negligible increases in noise levels over current impacts. None of these impacts are considered significant.

5.1.12. Socioeconomics

Impacts from the Proposed Action on the population of the area would occur during the construction and operation phases of the project. During the

construction phase of the project, which would last approximately five (5) months, an average of approximately 20 contract construction workers would be expected to be working on the project site. Approximately eight (8) individuals would be hired as regular employees for the mining and leaching operations under the Proposed Action (of which RMC anticipates that 80 percent would be from the local labor force). This would not significantly change the existing annual payroll of approximately $6,000,000.00 (Stillar, 1994), although the Rand Project would extend the duration of this payroll, and the other economic benefits, by five (5) or six (6) years. RMC would pay approximately an additional $60,000.00 per year in property taxes, which would bring the total property taxes bill to $260,000.00 per year. The approximately $10,800,000.00 per year in operating and maintenance supplies which are currently purchased from local vendors would not significantly change under the Proposed Action, but would be continued for an additional five (5) or six (6) years. There would be an approximately $140,000.00 in additional power purchased from the electrical utility, which would bring the total annual power purchases to $740,000.00.

The creation of these new jobs and the amount of local expenditures would result in secondary economic benefits through increased local service employment. Using the BLM's mining employment multiplier for the California Desert area of 2.666, approximately 21 new secondary jobs would be created by implementation of the Proposed Action, which would be in addition to the approximately 373 secondary jobs created as a result of RMC's existing operations (Anderson, 1989). In addition to these increases in expenditures and employment resulting from the Proposed Action, the existing expenditure and employment would continue for nine (9) to ten (10) years longer than currently planned and permitted. The total combined existing and proposed expenditures and employment figures are $17,800,000.00 per year, 148 employees and 394 secondary jobs for the next nine (9) to ten (10) years.

Because the addition of eight (8) individuals to the existing RMC workforce under the Proposed Action represents only a 0.5 percent increase, it is anticipated that all these individuals would join existing carpools and, therefore, there would be no net increase in traffic on the highways as a result of the Proposed Action.

However, the existing traffic on U.S. Highway 395 related to RMC's existing operations, which is approximately 1.0 percent of the total traffic volume, would occur for an additional nine (9) to ten (10) years longer than currently planned. The construction workers would likely live in Ridgecrest and commute seven (7) days a week to the project site, resulting in approximately 30 trips per day. Therefore, during the five (5)-month construction phase of the project there would likely be an approximate 0.1 percent increase in the daily traffic volume on U.S. Highway 395. None of these impacts are considered significant.

The housing requirement for the construction work force would be met by rented RV park space, apartments or motel rooms (with or without kitchen facilities). Given the limited number of construction workers and the limited time which the construction workers would be in the local area, any impact caused by their entry into the housing market would be very small and short-term in nature. The permanent worker force would be hired principally from the existing local labor force; therefore, no appreciable impact to the housing market is anticipated from the Proposed Action.

5.1.13. Other Resources

The Proposed Action would have no impacts to: prime and unique farmland; floodplains; ACECs; wild and scenic rivers; or areas of traditional Native American religious concern.

5.2. No Action Alternative

5.2.1. Mineral Resources

Under the No Action alternative, none of the precious metals which would be produced under the Proposed Action would be mined, and the additional mineral resources would not be developed but remain for possible future development. All impacts to mineral resources associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.2. Physiography and Geology

None of the impacts associated with the expanded mining operation and associated reclamation under the Proposed Action would occur under the No Action alternative. This includes the historic surface disturbance that would have been consumed by the mining operations and reclaimed under the Proposed Action. However, all impacts to physiography and geologic resources associated with the existing permitted mining operations would continue to occur.

5.2.3. Soils

None of the impacts to the soil resources identified under the Proposed Action would occur under the No Action alternative. However, all impacts to soil resources associated with the existing permitted mining operations would continue to occur.

5.2.4. Hydrology

5.2.4.1. Surface Water

None of the impacts to the surface water resources associated with the implementation of the Proposed Action would occur under the No Action alternative. However, all impacts to surface water resources associated with the existing permitted mining operations would continue to occur.

5.2.4.2. Groundwater

None of the impacts to the groundwater resources associated with the implementation of the Proposed Action would occur under the No Action alternative. However, RMC's current consumption of an average of up to 400 gpm (576,000 gpd) of groundwater from the Fremont Valley would continue. As water consumption would be expected to decrease beginning in fiscal year 1997, these existing RMC operations would be expected to consume an average of approximately 190 gpm (273,600 gpd) for the remaining 6-year

mine life. As described in Chapter 4, these impacts would result in approximately one (1) foot of additional drawdown in the vicinity of the RCWD wells after six (6) years.

5.2.5. Air Quality

Under the No Action alternative, none of the impacts to the air quality associated with the Proposed Action would occur. However, all impacts to air resources associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.6. Vegetation and Range Resources

5.2.6.1. Vegetation Communities

Under the No Action alternative, none of the impacts to the vegetation resources associated with the Proposed Action would occur. However, all impacts to vegetation resources associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.6.2. Range Resources

Under the No Action alternative, none of the impacts to range resources associated with the Proposed Action would occur. However, all impacts to ranges resources associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.7. Wildlife Resources

Under the No Action alternative, none of the impacts to wildlife resources associated with the Proposed Action, including proposed impact reduction measures to enhance desert tortoise habitat and the compensation for tortoise habitat reduction, would occur. However, all impacts to wildlife resources

associated with the existing permitted mining operations, including tortoise habitat impact reduction and compensation measures, would continue to occur.

5.2.8. Cultural and Paleontological Resources

5.2.8.1. Cultural Resources

Under the No Action alternative, none of the impacts to cultural resources associated with the Proposed Action would occur. However, all impacts to cultural resources associated with the existing permitted mining operations would occur or continue to occur.

5.2.8.2. Paleontological Resources

There would be no impacts to paleontological resources as a result of implementation of the No Action alternative.

5.2.9. Visual Resources

Under the No Action alternative, none of the impacts to visual resources associated with the Proposed Action would occur. This includes the potential incremental enhancement to the visual resources resulting from the reclamation of historic surface disturbance. However, all impacts to visual resources associated with the existing permitted mining operations would continue to occur.

5.2.10. Noise

Noise impacts resulting from activities associated with the Proposed Action would not occur under the No Action alternative. However, all noise-related impacts associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.11. Land Use and Wilderness

None of the land use classifications, road system, recreational or wilderness impacts associated with the implementation of the Proposed Action would occur under the No Action alternative. However, all land use-related impacts associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.12. Socioeconomics

Under the No Action alternative, none of the socioeconomic impacts associated with the implementation of the Proposed Action would occur. This includes the approximately $60,000.00 annually in additional property taxes, $140,000.00 annually in additional electrical purchases, the additional eight (8) employees, and 21 secondary jobs, as well as not continuing the current level of expenditures ($17,600,000.00 annually) and employment (140 individuals) for the additional nine (9) to ten (10) years. However, all socioeconomic impacts associated with the existing permitted mining operations would continue to occur for the life of these projects.

5.2.13. Other Resources

The No Action alternative would have no impacts to prime and unique farmland; floodplains; ACECs; wild and scenic rivers; or areas of traditional Native American religious concern.

5.3. Agency Preferred Alternative

The BLM preferred alternative is the alternative which best fulfills the agency's statutory mission and responsibilities while giving consideration to economic, environmental, and technical concerns and other factors. The NEPA and CEQA environmentally superior alternative is the alternative that is determined to have the least adverse environmental effects, other than the No Action alternative. The Proposed Action, as presented above, consists of several related components which

are combined to describe the action. The preferred and environmentally superior alternative consists of the Proposed Action, including required mitigation measures as proposed in Chapter 6. The proposed mitigation measures would include: timely reclamation of disturbed lands as approved under the approved Rand Project Reclamation Plan; minimization of the amount of surface disturbance needed for the project; monitoring for, and mitigation of, unexpected hydrologic effects due to implementation of the Proposed Action; and implementation of the terms and conditions in the USFWS biological opinion for protection of desert tortoise and mitigation measures in 1993 biological assessment for protection of Mohave ground squirrel. The potential unavoidable effects to the environment associated with implementation of the Agency Preferred Alternative are discussed in Chapter 7. The Agency Preferred Alternative would lessen impacts to the existing environment and allow RMC to explore for and develop existing mineral resources.

CHAPTER 6
MITIGATION MEASURES FOR THE PROPOSED ACTION

6. MITIGATION MEASURES FOR THE PROPOSED ACTION

Environmental protection measures contained in the Proposed Action are incorporated by project design to mitigate possible impacts resulting from the implementation of the Proposed Action. These environmental protection measures contained in the Proposed Action (see Section 2.3) have been considered in the analysis of the Proposed Action and alternatives and assessment of its impacts. The mitigation measures outlined in this chapter were developed by the BLM and Kern County to prevent unnecessary and undue degradation of the lands in the project area of operations. These recommended mitigation measures are developed through both the NEPA process as required under 43 CFR 3809.2-1(a) and the CEQA process as required under 14 CCR 3652. These recommended mitigations, when adopted as part of the applicable permits would, become stipulations that must be implemented in order to prevent unnecessary and undue degradation of the lands in the project area.

6.1. Mineral Resources

No recommended mitigation measures.

6.2. Physiography and Geology

No recommended mitigation measures.

6.3. Soils

A-1 Impacts to soils shall be mitigated by keeping surface disturbance to the minimum that is required to construct and operate the project.

A-2 The topsoil stockpile shall be designed to minimize wind and water erosion and shall not be disturbed until the commencement of reclamation activities, unless utilized for vegetation test plots. This shall include the creation of a low relief stockpile, which shall be seeded in the first year after stockpiling with a nitrogen-fixing species or used as test plot sites.

6.4. Hydrology

6.4.1. Surface Water

B-1 Roads shall be crowned and water bars shall be constructed to minimize erosion and sediment production.

B-2 Topsoil stockpiles shall be seeded with a nitrogen-fixing species or used as test plot sites to limit erosion.

B-3 An erosion and sedimentation plan shall be developed and shall be subject to review and approval by the BLM and Kern County in order to minimize sedimentation resulting from surface water impacts.

No other mitigation measures are recommended.

6.4.2. Groundwater

C-1 RMC shall conduct a monitoring program of the production from, and water levels in, the RMC production and observation wells, as outlined in the groundwater monitoring program attached as Appendix M of the EIS/EIR.

C-2 The data acquired from this monitoring program shall be submitted annually by RMC to the BLM and Kern County on or before April 1 of each year.

C-3 RMC shall annually compare the water level data collected by the monitoring program to the water levels predicted by modeling and attached to the groundwater monitoring program attached as Appendix M of the EIS/EIR. In the event that the monitoring program shows a 200-percent difference between the actual data and the model results, RMC shall have the model reevaluated using the information gained during the monitoring program to determine what effect RMC's

pumping has had on the water resource and the effect of RMC's future pumping would have on the resource. An assessment, based upon the data, shall be made of the effect RMC's pumping has on the geohydrologic environment.

C-4 If the Rand Community Water District should determine that remedial action is necessary to mitigate the effects of a static water table decline in either well RCWD #1 or well RCWD #2, RMC shall contribute to the funding of the remedial action in an amount directly proportional to the amount of water RMC has pumped from the northeastern Fremont Valley as compared to the total amount pumped from the northeastern Fremont Valley by all groundwater producers over the applicable time period.

The applicable time period for both the RMC funding commitment and northeastern Fremont Valley groundwater production shall commence with the date RMC begins leaching operations at the Lamont Valley leach pad, and shall end on December 31 of the year in which RMC ceases to withdraw water from the Fremont Valley for use at the Lamont Valley leach pad.

Consistent with the time periods set forth above, RMC shall place the required funds into an escrow account when requested by the Rand Community Water District (RCWD) once RCWD has provided the following information to the satisfaction of the Kern County Planning Department: 1) well monitoring information to demonstrate that the static water level in either well RCWD #1 or well RCWD #2 has fallen to a level indicating a need for remedial action; 2) the budget for the proposed remedial action; and 3) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period.

The required funds deposited into the escrow account shall be disbursed to the RCWD upon request once the RCWD has provided the

following information to the satisfaction of the Kern County Planning Department: 1) the total cost of the remedial action; and 2) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period.

No other mitigation measures are recommended.

6.5. Air Quality

D-1 Any disturbed surfaces no longer needed for project activities shall be reclaimed to minimize fugitive dust emissions.

D-2 All operations shall be conducted in compliance with permits granted by the KCAPCD, including implementation of a program to minimize fugitive dust emissions through watering or the application of dust palliatives.

No other mitigation measures are recommended.

6.6. Vegetation and Range Resources

6.6.1. Vegetation Communities

E-1 To mitigate impacts to Joshua trees, RMC shall, after the non-articulated, less than 4-foot tall Joshua trees have been removed to either the existing or proposed topsoil stockpile areas, allow nurseries and other authorized individuals or groups into the project area to salvage all remaining Joshua trees which would otherwise be destroyed as a result of the construction activities. The BLM should notify the nurseries and others, and there shall be a reasonable period prior to the start of construction during which time the salvage operations could occur.

E-2 Monitoring and reporting of any previously undiscovered Red Rock Poppy populations shall be conducted in accordance with standard BLM

procedures during the ongoing vegetation monitoring under the Proposed Reclamation Plan.

E-3 Proposed construction and operations shall utilize existing roads and already disturbed surfaces.

No other mitigation measures are recommended.

6.6.2. Range Resources

No recommended mitigation measures.

6.7. Wildlife Resources

F-1 Impacts to wildlife habitat through surface disturbance associated with construction and operation of the project shall be minimized by disturbing only that area required to construct and operate the project.

F-2 Proposed construction and operations shall utilize existing roads and previously disturbed surfaces to the extent practical to minimize additional surface disturbance and associated wildlife habitat losses.

F-3 OHV traffic shall be restricted in the project area to minimize additional loss of wildlife habitat.

F-4 Measures to reduce potential impacts, as detailed in the Biological Opinion (Appendix L of the EIS/EIR) resulting from the Proposed Action, both direct and indirect, to the desert tortoise and the Mohave ground squirrel have been incorporated by reference into the Proposed Action. However, the specific terms and conditions outlined in the 2081 Permit shall be implemented to minimize impacts to the desert tortoise. The three (3) shafts identified, in the 1993 Bat Survey, as active bat habitats which would not be directly affected by the Proposed Action shall be fenced to minimize human entrance into those shafts. Shafts identified, in the 1993 Bat Survey,

as active bat habitats which would be directly affected by the Proposed Action shall be cleared of bats prior to the initiation of project activities.

F-5 All employees shall be responsible for reporting wildlife mortalities. Monitoring and notification of wildlife mortalities shall be submitted monthly to the Ridgecrest Resource Area Manager by the Environmental Affairs Supervisor. Reports shall include: month of report; project name (Yellow Aster, Lamont, Baltic, and Descarga); CAMC No.; number of deaths; date of death; wildlife group; location of death; cause of death; and identification by species of the wildlife found dead. Process operators shall have the prime responsibility for monitoring areas where cyanide is used. They shall inspect the areas in the course of normal duties. Any wildlife deaths shall be recorded on their daily report, noting place, date and time of death. Process operators and their supervisor shall report wildlife mortalities directly to the Environmental Affairs Supervisor. If any personnel other than the process operator and their supervisor discover a wildlife death, they shall notify their supervisor who shall in turn notify the Environmental Affairs Supervisor. All carcasses of endangered and threatened species, migratory birds, bats, and any other animals that are not confidently identified by RMC personnel shall be retrieved, placed in a plastic bag, and stored in a refrigerated area (not to exceed five (5) days) until identified by qualified personnel.

F-6 In order to immediately mitigate impacts relating to pooling/puddling of cyanide solution due to lack of percolation, measures to be taken shall include, but not be limited to, breaking of the heap leach surface with a shovel, pick or other such tools and/or graveling or cobbling of the pools and/or puddles. All waters that contain any chemical in solution at levels lethal to wildlife (e.g. barren and pregnant ponds) shall be covered or contained in a manner that shall preclude access by wildlife. All covers shall be maintained in a manner that shall continue to preclude access by wildlife as long as the pond can hold solution. Open collection channels which form at the margins of heaps and contain cyanide solution shall be covered to exclude wildlife.

F-7 Heap leach pads shall be inspected for rocks or other conditions which may be used by perching birds and the conditions shall be altered or the rocks removed from the area.

F-8 An alternative fresh water source shall be constructed for birds, which shall be located at least 100 yards from the heap leach pads and 100 yards from roads, in an area of little disturbance. The water source shall be situated at an elevation equal to or greater than the final lift of the heap leach pad. RMC shall consult with BLM regarding design and construction of the alternative fresh water source for wildlife.

F-9 Upon notification by the BLM, RMC shall provide access to the project by representatives of the BLM to periodically check on the status and efficacy of the wildlife protection measures.

No other mitigation measures are recommended.

6.8. Cultural and Paleontological Resources

6.8.1. Cultural Resources

G-1 There are no known National Historic Preservation Act (NHPA) eligible sites in the project area, therefore, no impacts to known cultural resources are expected. However, should unidentified cultural resources be discovered during project operations RMC shall notify the BLM and/or Kern County, depending upon whether the resources are located on public or private land, respectively.

No other mitigation measures are recommended.

6.8.2. Paleontological Resources

G-2 There are no known paleontological resources known to or expected to occur in the project area, therefore, no impacts to known

paleontological resources are expected. However, should unidentified paleontological resources be discovered during project operations RMC shall notify the BLM and/or Kern County, depending upon whether the resources are located on public or private land, respectively.

No other mitigation measures are recommended.

6.9. Visual Resources

H-1 Lights used for mining and processing operations at night shall have reflectors or shields to eliminate or minimize fugitive light.

No other mitigation measures are recommended.

6.10. Noise

I-1 Blasting activities shall be limited to daylight hours and coordinated between the Baltic, Yellow Aster, Lamont and satellite pits to avoid coincident blasts.

I-2 All heavy equipment, drilling rigs, and other internal combustion engines shall employ mufflers to minimize indirect impacts to sensitive noise receptors and wildlife from noise generated during construction, operation and reclamation activities.

I-3 RMC shall take appropriate measures to comply with the Kern County Noise Element of the County General Plan.

No additional mitigation measures are recommended.

6.11. Land Use and Wilderness

J-1 RMC shall maintain a current standing notice with the China Lake NAWS which indicates the days times of blasting at the Rand Project.

No additional mitigation measures are recommended.

6.12. Socioeconomics

No recommended mitigation measures.

6.13. Other Resources

No recommended mitigation measures.

CHAPTER 7
UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION

7. UNAVOIDABLE EFFECTS OF THE PROPOSED ACTION

7.1. Mineral Resources

Unavoidable effects would be the permanent removal of 60 million tons of ore from the open pits.

7.2. Physiography and Geology

There would be an unavoidable, potentially significant, effect to the physiography from the permanent change in the topography by the creation of the open pits, waste rock stockpiles and heap leach piles.

7.3. Soils

There would be an unavoidable effect to the soils after mitigation because there would be some erosion of the soils that would still occur, and only the upper portion of the soil profile would be stockpiled while the lower portion would be buried under the waste rock stockpiles and heap leach piles.

7.4. Hydrology

7.4.1. Surface Water

There would be an unavoidable effect to surface water after mitigation because some sedimentation during major storm events would still be possible.

7.4.2. Groundwater

An unavoidable effect to groundwater after mitigation would be the consumption of the groundwater resources used by the Rand Project. This consumption would be temporary, for the life of the project, and is potentially significant. However, the resultant drawdowns from the Rand Project production of groundwater are not considered significant.

7.5. Air Quality

Unavoidable effects to air quality after mitigation are a continuation of fugitive dust emissions from the present level of operations and a minimal increase in fugitive dust emissions from mining operations, hydrocarbon and combustion emissions from internal combustion engines, and air toxics from all sources during the life of these operations.

7.6. Vegetation and Range Resources

7.6.1. Vegetation Communities

Unavoidable effects to vegetation resources would be the incremental short-term loss of vegetation from 511 acres disturbed during mine development and operation. Unavoidable effects would also occur from the long-term loss of vegetation from 132 of these 511 acres including the pit, highwall and other areas within the pits at the conclusion of the mine life.

7.6.2. Range Resources

Unavoidable effects to range resources would be the short-term loss of potential forage from 511 acres and the long-term loss of potential forage from 132 of these 511 acres.

7.7. Wildlife Resources

Unavoidable effects to wildlife resources would be the short-term direct loss of habitat from 511 acres and the long-term loss of habitat from 132 of these 511 acres, in addition, short-term indirect loss of habitat through avoidance of approximately 2,500 acres.

7.8. Cultural and Paleontological Resources

7.8.1. Cultural Resources

There are no known NHPA eligible sites in the project area, therefore, no unavoidable effects to cultural resources are expected.

7.8.2. Paleontological Resources

There are no unavoidable effects to paleontological resources.

7.9. Visual Resources

Potentially significant unavoidable effects to visual resources would be a change in the visual character of the landscape by increasing the amount of mining-related landforms.

7.10. Noise

There are no noise-related long-term unavoidable effects.

7.11. Land Use and Wilderness

Unavoidable effects to recreational resources are short- and long-term restrictions on the recreational use of the area, which are consistent with federal and county land use planning for the area. There are no residual impacts to wilderness areas or WSAs.

7.12. Socioeconomics

Unavoidable effects to socioeconomics are mostly beneficial, such as additional taxes available for investment and improvements in the county, and increased spending by people associated with the project for the life of the mine.

7.13. Other Resources

There are no unavoidable effects to other resources.

CHAPTER 8
OTHER REQUIRED IMPACT CONSIDERATIONS

8. OTHER REQUIRED IMPACT CONSIDERATIONS

As required by the CEQA and, to a certain degree NEPA, this chapter discusses specific impacts of the Proposed Action in ways not otherwise addressed in specific detail in Chapter 5, Environmental Consequences of the Proposed Action and Alternatives.

8.1. Unavoidable Adverse Impacts

Unavoidable adverse impacts which may result from the implementation of the Proposed Action include: the generation of dust, including air toxics, from project-related activities; the loss of vegetation and wildlife habitat in the project area; the destruction of identified and recorded cultural resources; the consumption of groundwater resources; the permanent alteration of the topography of the project area; and the potential reduction in the visual resources of the project area.

The fugitive dust generated by the project-related surface disturbance and rock moving activities would contribute to a slight decrease in the quality of the air resources in the air basin. Small quantities of toxic and potential carcinogenic elements and compounds contained in this dust and from other project-related sources could lead to an increase of 4.34 excess cases of cancer per one (1) million population from the estimated maximum cancer risk of 2.9×10^{-6}, or 2.9 additional cases per one (1) million population, from pre-project emissions, to a maximum cancer risk of 7.24×10^{-6}, or 7.24 excess cases of cancer per one (1) million population, from the implementation of the Proposed Action. However, the excess cancer risk from RMC operations, either existing or including the Proposed Action, are still far below the level which is defined by the Kern County Air Pollution Control District (KCAPCD) as significant, and would be expected to have minimal impact on the population areas immediately surrounding the project area. Dust suppression measures would be implemented to minimize these impacts. Mitigation measures to control impacts to air quality would be required of the project by the KCAPCD.

Project-related activities would remove vegetation and disturb the surface of 511 acres, which would also eliminate wildlife habitat from this disturbed area. This impact would continue for the duration of the project until reclamation was complete.

Mitigation measures would be required of the project by the BLM, USFWS, CDFG and Kern County to minimize impacts to protected species.

Seventy-four (74) of the 213 identified and recorded historic cultural sites would be disturbed by the Proposed Action. This would be an adverse impact to those recorded sites. The BLM and the State Historic Preservation Officer (SHPO) have determined that the identification and recordation of each of these sites is sufficient mitigation.

Approximately 556 afpy of groundwater over ten (10) years (approximately 5,560 acre-feet total) would be consumed by the pumping of groundwater from the existing Fremont Valley RMC wells for the Rand Project. The production of groundwater would be an unavoidable adverse and potentially significant impact to groundwater resource. Over time the non-significant impact to the water table drawdown in the vicinity of RMC wells would recover.

The topography would be permanently altered by the construction of the open pits, waste rock stockpiles and leach pads in the project area. This would create a potentially significant unavoidable adverse impact to the topography of the area. In addition, this change in the topography would have a potentially significant adverse impact on the visual resources of the area.

8.2. Irreversible and Irretrievable Commitment of Resources

The only appreciable irreversible or irretrievable commitments of resources would be to the topography, biological resources, cultural resources, groundwater resources, and mineral resources. The topography would be permanently altered by the placement of the open pits, waste rock stockpiles and leach pads in the project area. Wildlife habitat, including that for the desert tortoise and the Mohave ground squirrel, may be permanently lost, although implementation of proposed impact reduction measures and compensation should result in the net increase of protected habitat. Seventy-four (74) cultural resource sites in the project area would be directly impacted; however, those resources have been recorded during previous field investigations or the mitigating treatment plan and all research value will have been

recovered. There would be a net consumption of groundwater resources, but only for the life of the project. The removal of ore from the open pits would be an irreversible commitment of geologic and mineral resources.

8.3. Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

The principal land uses in the project area have been established by past activities and are defined under FLPMA as mineral exploration and production, outdoor recreation, wildlife habitat and grazing. The Proposed Action would commit an additional approximate 511 acres of the 2,520-acre project area to a single land use for approximately nine (9) to ten (10) years, during the operation of the mine. The remainder of the project area would be fenced, but would continue to be available for wildlife habitat, exclusive of the desert tortoise. Recreation opportunities would be reduced by the closure of the roads and routes through the project area.

Upon completion of the mining activities, the project area would be reclaimed and the existing land uses would be re-established over a majority of the project area. The length of time for successful reclamation may be greater than ten (10) years. Although the expanded portion of the open pits, which cover approximately 132 acres, would be reclaimed to a level that minimized potential risk to health and safety, it would not re-establish grazing, original wildlife habitat, or recreational land uses in the area of the open pits. The pits would, however, remain accessible for future mineral development and selective wildlife habitat.

The project proponent believes that the Proposed Action is justified at this time because of the economic and social benefits generated by the project. Total RMC project employment for the existing and proposed operations (148 individuals and a $6,000,000.00 annual payroll), secondary employment (394 individuals), direct expenditures and indirect expenditures ($10,800,000.00 annually), electrical power purchases ($740,000.00 annually) and property tax ($260,000.00 annually) would contribute to the viability of the local and regional economy for an additional nine (9) to ten (10) years beyond the current permitted operations with the approval of the Proposed Action, which would result in the mine operating for approximately

12 years, or until approximately 2006. The development of the mineral resources is in the national interest to satisfy industrial and security needs. In providing these benefits, the project would not preclude the long-term use of a majority of the project area for other principal land uses.

8.4. Growth-Inducing Effects of the Proposed Action

It is expected that the growth-inducing effects of the Proposed Action would be limited to the housing demand for employees and secondary economic growth from expenditures by the project proponent and its employees. The Proposed Action would provide continued direct employment for approximately 140 people and the new employment of eight (8) people for the nine (9)- to ten (10)-year life of the mine, which would result in the mine operating for approximately 12 years, or until approximately 2006. Secondary employment resulting from the combination of the existing and new employment is anticipated to be approximately 394 people. It is anticipated that most of the new employees (approximately eight (8) individuals) would come from the existing labor market in the region. It is believed that the existing and planned residential areas in Ridgecrest, the Rand Communities, California City and Mojave are adequate to meet the needs of employee housing. The expenditures by the project proponent and its employees would create some secondary (indirect) employment in the retail and services sectors, but it is expected these positions would continue to be filled from the existing labor market in the region.

8.5. Energy Consumption and Conservation

Construction and operation of the Proposed Action would result in the consumption of non-renewable energy resources. These resources would primarily include petroleum products, such as diesel fuel, gasoline, propane, and electricity. Fuel consumption by heavy equipment would be the largest single energy requirement. One of the primary opportunities for energy conservation would be regular, scheduled maintenance of the vehicles and equipment to maximize fuel efficiency. The Proposed Action has been designed for operational efficiencies, including minimizing haul road length to reduce fuel consumption. In addition, the

project proponent encourages carpooling by project employees to reduce gasoline consumption.

CHAPTER 9
CUMULATIVE IMPACTS

9. CUMULATIVE IMPACTS

9.1. Introduction

As required under NEPA and CEQA, this chapter describes and analyzes the potential incremental increase in cumulative environmental impacts on the environmental resources in the northeastern Rand Mountains area which could result from the implementation of the Proposed Action. Cumulative impacts are defined under federal regulations as:

> "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The State of California CEQA guidelines define cumulative impacts as:

> "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probably future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (14 CCR 15355).

The geographical area considered for the analysis of cumulative impacts usually varies in size and shape to reflect each environmental resource that is evaluated. The specific resources of concern which have been cumulatively impacted and/or would be cumulatively impacted by the Rand Project have been identified as: physiography (surface disturbance); hydrology (groundwater); air quality; and biology (wildlife). For this cumulative impact analysis, these resources can be adequately evaluated using a single study area which includes the northeastern Rand Mountains, the

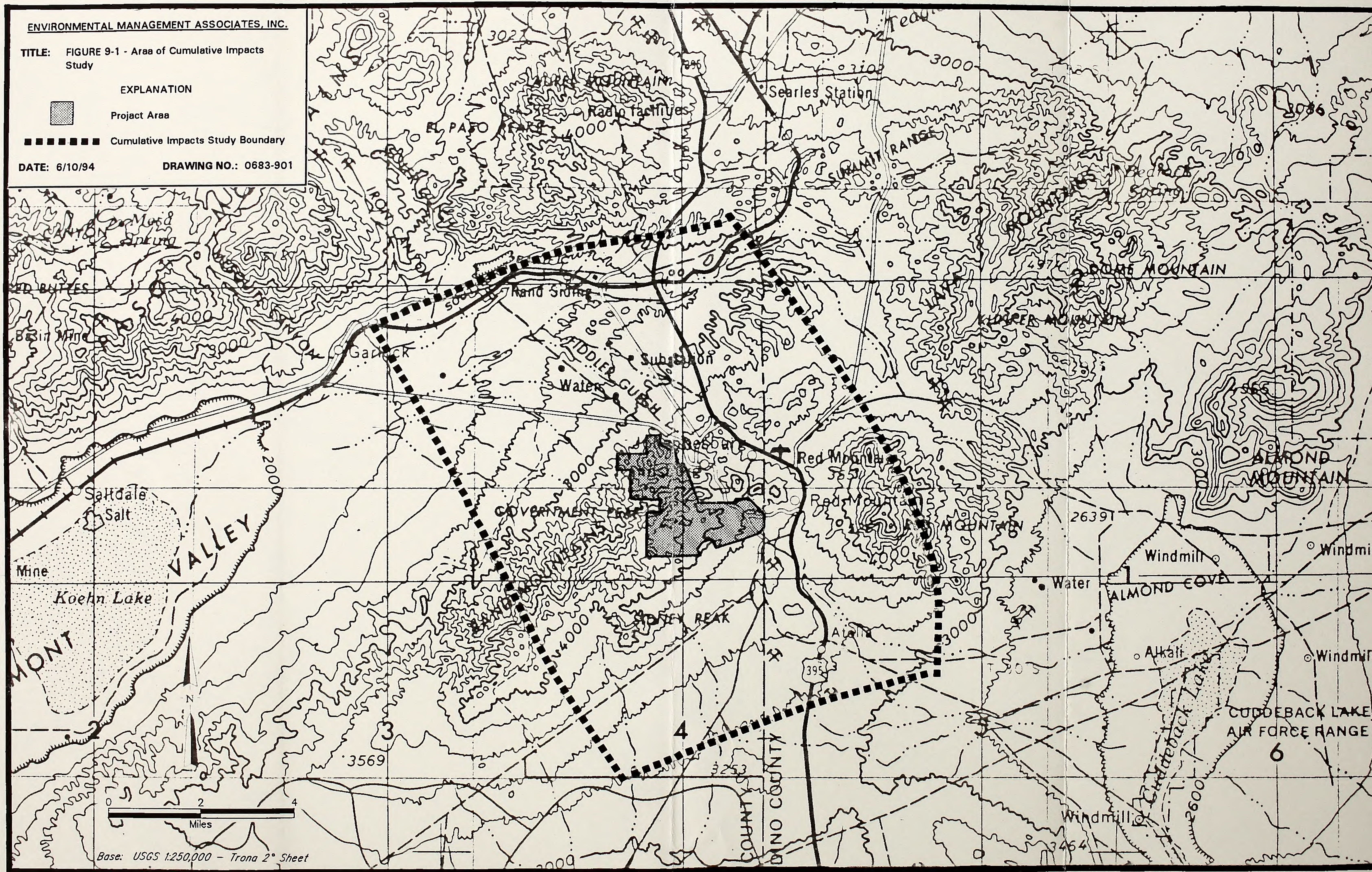
northeastern portion of Fremont Valley and the northwestern portion of the Cuddeback Lake basin (Figure 9-1). The foreseeable future scenario (see Section 9.4) has been developed by Kern County and the BLM, and includes the activities of the mining and livestock industries and OHV use, all of which have the potential to impact the environmental resources of concern within the area of cumulative impacts analysis. The reasonably foreseeable future analysis for this EIS/EIR was evaluated for a 15-year time frame, which was based on a reasonable estimation of the potential future mine life of the Rand Project.

The BLM has completed the analysis required under NEPA for the Yellow Aster Mine Expansion Project (Yellow Aster) (EA-065-90-116) and approved the project as defined in the proposed action portion of the Yellow Aster EA (USDI, 1990b; pages 11 through 20). In addition, Kern County and the BLM have completed the Baltic Mine Project EIS/EIR (EIS-065-91-047; State Clearinghouse Number 91052039) and approved the project as defined in the proposed action portion of the Baltic Mine Project EIS/EIR (USDI, 1992; pages 2-1 through 2-47). This chapter of the Rand Project EIS/EIR incorporates by reference the analysis of the cumulative impacts in the Baltic Mine Project EIS/EIR (USDI, 1992; Pages 6-1 through 6-22) and reassesses the existing, proposed, and reasonably foreseeable future scenario provided in the Baltic Mine Project EIS/EIR (USDI, 1992; page 6-10 through 6-16) and whatever incremental increase would be associated with impacts from the Proposed Action.

9.2. Existing Activities in the Area of Cumulative Analysis

Mining, livestock operations and OHV use are ongoing in the northeastern Rand Mountains area. Livestock operations are conducted by 15 permittees who graze sheep on the Cantil Common Ephemeral Allotment, which comprises the entire cumulative impacts area (Figure 4-6). Mineral exploration and development activities are conducted by RMC, other companies, and individuals. OHV use of the area is high, and is conducted both by individuals and private associations (Keeler, 1993).

Mineral exploration and development has been a use of the area for the past 100 years. Figure 4-2 shows the location of the historic mine shafts and major historic

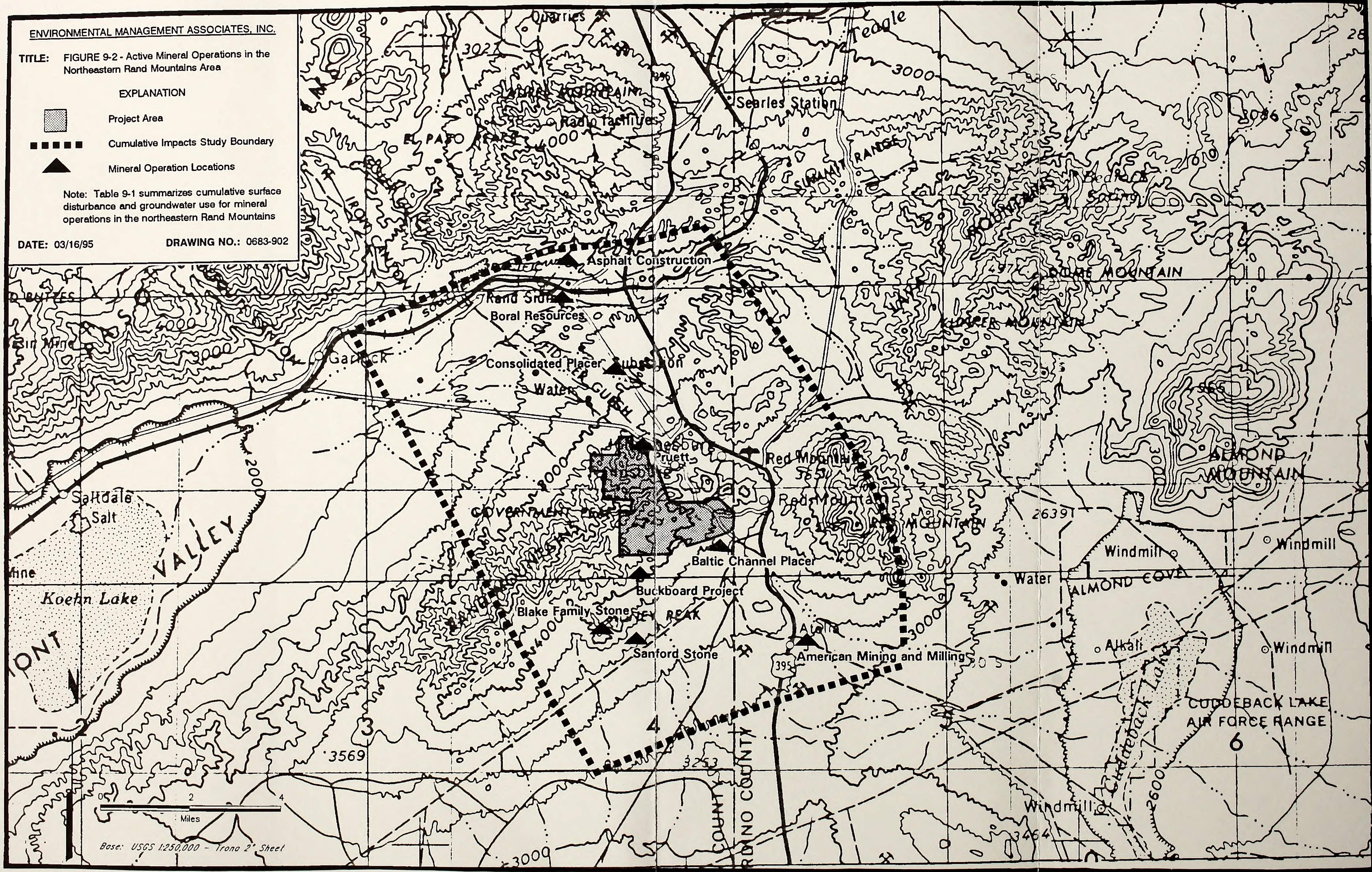

ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 9-1 - Araa of Cumulative Impacts Study
EXPLANATION
Project Araa
Cumulative Impacts Study Boundary
DATE: 6/10/94
DRAWING NO.: 0683-901
Searles Station
Radio facilities
SUMMIT RANGE
EL PASO PEAKS
Rand Siding
Garlock
Substation
Water
FIDDLER GULCH
Red Mountain
GOVERNMENT PEAK
ALMOND MOUNTAIN
Windmill
Water
ALMOND COVE
Alkali
Windmill
CUDDEBACK LAKE AIR FORCE RANGE
Saltdale
Salt
Mine
Koehn Lake
VALLEY
Atolia
395
3
4
6
3569
3253
Miles
Base: USGS 1:250,000 - Trona 2° Sheet

mining operations. The majority of the recent precious metals mining activities in the northeastern Rand Mountains have been conducted by RMC; this includes both ongoing mining and exploration activities. In addition to RMC's operations, Brenna Resources is currently conducting development stage drilling at the Buckboard property under a Notice of Intent (NOI), and Consolidated Placer controls a permitted placer mine operation. Other mineral commodities being produced within the cumulative impacts study area include flagstone and gravel. Currently there are two (2) flagstone operations, two (2) gravel operations and one (1) mine waste reprocessing operation within the cumulative analysis area (Denney, 1993). Other federal mining claims have been filed in the northeastern Rand Mountains area, but at present these claims are maintained by completing the minimal annual assessment work and/or fee requirements. Figure 9-2 shows the locations for the existing, proposed, and reasonably foreseeable future mining operations.

9.2.1. Rand Mining Company Operations

RMC currently operates several approved precious metal, heap-leach mining operations in the northeastern Rand Mountains south of the town of Randsburg. These operations are located within close proximity to each other and include: the Yellow Aster Mine; the Lamont Mine; the Baltic Mine; and the Descarga Operations. The main facilities associated with these operations consist of open pits, waste rock stockpiles, heap leach pads, and process plants. Figure 2-1 shows, in more detail, the locations of specific components of RMC's existing mining operations. The total permitted acreage of disturbance for these RMC operations is approximately 761 acres. All of RMC's current operations are located within the proposed Rand Project area. These operations are planned to continue for the next six (6) years.

Open pits have been developed at the Yellow Aster, Baltic, and Lamont Mine sites. Both ore and waste rock are mined at a combined average rate of approximately 45,000 tpd. The total approved disturbance for the development of these pits is approximately 193 acres. The material mined from the pits is segregated into waste and ore and transported to the nearest waste rock stockpile or heap leach process site.


ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 9-2 - Active Mineral Operations in the Northeastern Rand Mountains Area
EXPLANATION
Project Area
Cumulative Impacts Study Boundary
Mineral Operation Locations
Note: Table 9-1 summarizes cumulative surface disturbance and groundwater use for mineral operations in the northeastern Rand Mountains
DATE: 03/16/95
DRAWING NO.: 0683-902
Quarries
Searles Station
Radio facilities
Summit Range
Asphalt Construction
Rand Stone
Boral Resources
Garlock
Consolidated Placer
Water
Red Mountain
Pruett
Saltdale
Salt
Valley
Koehn Lake
Baltic Channel Placer
Buckboard Project
Blake Family Stones
Sanford Stone
Atolia
American Mining and Milling
Windmill
Water
Almond Cove
Alkali
Almond Mountain
Cuddeback Lake
Cuddeback Lake Air Force Range
6
3
4
3569
3253
3000
2639
395
Kern County
San Bernardino County
0 2 4
Miles
Base: USGS 1:250,000 - Trona 2° Sheet

The current operations utilize three (3) waste rock storage sites. Run-of-mine ore is placed directly on the heap leach pads. RMC currently operates three (3) heap leach and process plant facilities. These are located at the Yellow Aster, Baltic and Descarga sites. The heap leach facilities are designed to process the ore recovered from each open pit operation with the exception of Descarga. The Descarga process facility is designed as a test leach facility for materials from the Randsburg area and mine waste from the historic Yellow Aster mining operations. Process and dust control water consumption for the project operations, supplied from project wells, is at an average of approximately 645 afpy. As water consumption would be expected to decrease beginning in fiscal year 1997, these existing RMC operations would be expected to consume an average of approximately 305 afpy for the remaining 6-year mine life.

9.2.2. Flagstone Mining Operations

Randsburg Schist flagstone is currently mined from two (2) locations in the area (Figure 9-2). Flagstone is used as a decorative rock for fireplaces, walkways, pools, homes and buildings. The operations consist of open pit quarrying and sorting of the material for shipment. Operations are conducted on both private and federal lands, with the federal land being used under non-competitive salable mineral contracts with the BLM. These two (2) operations are controlled by two (2) separate owners; the Sanford Stone Company and Ulti Solutions.

The Sanford Stone Company mine site is located in the NE¼ of Section 22, Township 30 South, Range 40 East, on a combination of both federal lands and private lands (the private lands consisting of a 20-acre patented claim block) (Figure 9-2). The mine site is a full-time operation that employs approximately 20 people. Total production is approximately 10,000 tons per year (tpy) and the approved surface disturbance is 186 acres, of which eight (8) acres have been reclaimed (Denney, 1993).

The Ulti Solutions flagstone operation is located in the SE¼ of Section 16, Township 30 North, Range 40 East, and encompasses entirely private land. This

operation produces approximately 5,000 to 10,000 tpy and the permitted surface disturbance is 81 acres (Denney, 1993).

Water consumption for both the flagstone operations is estimated to be one (1) afpy (1,000 gpd) each and is used primarily for road dust control (Denney, 1993). The water is trucked to the mine sites from an off-site source and, as such, is not considered an impact to the groundwater resources of the cumulative impacts study area.

9.2.3. Other Mining Operations

Other currently active mining operations in the cumulative analysis area include two (2) gravel pit operations: 1) the Boral Resources gravel pit operation located in the Fremont Valley in SE¼ of Section 9, Township 29 South, Range 40 East; and 2) the CUP for the Asphalt Construction sand and gravel operation located in N½ of Section 9, Township 29 South, Range 40 East (Figure 9-2). The Boral Resources facility is located on private land and is currently permitted for 70 acres of surface disturbance. The gravel produced from the mine is used for local construction projects (Denney, 1993). This operation employs approximately ten (10) people and consumes approximately 34 afpy of water from a well located in the NE 1/4 of Section 21, Township 29 South, Range 40 East (see Figure 4-5) (Barker, 1993). Asphalt Construction is currently in the process of obtaining a permit for their operating, but currently unpermitted, sand and gravel facility. Current surface disturbance is approximately 45 acres. The operation consumes approximately one (1) afpy (1,000 gpd) of water which is trucked to the site from an off-site source (Denney, 1993). This trucked-in water is not considered an impact to the groundwater resources of the cumulative impacts study area.

Consolidated Placer Dredging (CPD) currently controls a permitted placer gold mining project on private land located in Section 22, Township 29 South, Range 40 East. At this time, the placer mine is in operation and the area of permitted disturbance encompasses 50 acres (Denney, 1993). A hydrologic study conducted for the operation indicates that the required water use will be 245 afpy which will be supplied from three (3) of the four (4) existing on-site wells (see

Figure 4-5) (Gnekow, 1993). This use is anticipated to continue through 1999 (Hargis + Associates, 1994).

American Minerals Management currently controls a mine waste reprocessing property located in Section 20, Township 29 South, Range 41 East near the town of Atolia. The operation at one time consisted of the removal of mine tailings from the Kelley Mine for reprocessing at the Atolia Mill site. The mine operation was active prior to 1976, the passage of SMARA, and the promulgation of accompanying regulations. Currently the operation has an unknown status. San Bernardino County Planning Department indicates that a Conditional Use Permit was never issued for the project and no information regarding acres of disturbance or water use is available in the files (Rush, 1993). Given that reprocessing of tailings did occur at the mine and mill sites, it is reasonable to estimate approximately ten (10) acres of disturbance to be associated with these activities. As the mining operation is currently inactive, it is assumed that there is no consumptive use of water at the site.

9.2.4. Exploration

RMC is currently conducting exploration activities at various locations in the general vicinity of the Rand Project, as well as in the northeastern Rand Mountains area. The acres of permitted disturbance for exploration within the Rand Project area are included in the disturbance calculations for the existing RMC operations. RMC's exploration disturbance outside the current approved areas of operations, within the northeastern Rand Mountains area, is approximately five (5) acres. In addition to the RMC exploration activities, Brenna Resources is currently conducting development stage drilling at the Buckboard precious metal property. Current exploration disturbance for this project is estimated to be five (5) acres. No other permitted surface disturbance exploration activities are currently ongoing in the northeastern Rand Mountains area.

9.2.5. Livestock Operations

Existing actual use in the Cantil Common Ephemeral Allotment ranges from 0 AUMs (animal unit months) to an historic average of 8,435 AUMs (USDI, 1980). Recent forage production has been relatively low, at approximately 600 to 1,000 lbs/acre, due to the drought conditions which were prevalent in the area for the past several years. As discussed in Section 4.6.2, in order to protect desert tortoise habitat, the Rand Mountains and Fremont Valley portions of the Cantil Common Ephemeral Allotment are currently withdrawn from grazing.

The BLM is presently in consultation with the USFWS regarding the future protection of the desert tortoise habitat in the Cantil Common Ephemeral Allotment. Much of the allotment is considered Class 1 tortoise habitat, or land that is in the best condition to support desert tortoises. The Rand Project area itself is considered Unclassified or Class 3 tortoise habitat, or land that is in the poorest condition to support desert tortoises (Rado, 1993b).

9.2.6. Off-Highway Vehicle Use

The current level of OHV use in the area is discussed in Section 4.11.3, and generally consists of casual use and organized events typically sponsored by the American Motorcycle Club. The surface disturbance associated with existing roads currently available to OHV use comprises approximately 120 acres. The existing roads evaluated for this acreage calculation include both the BLM routes that are proposed to be maintained under the RMFVMA Plan and the routes that are proposed to be closed under that plan, as well as routes outside the RMFVMA.

9.2.7. Irrigation Wells

A total of six (6) irrigation wells are present in the northeastern portion of the Fremont Valley, which cumulatively produce approximately 5,000 gpm (7,200,000 gpd). Currently, most of the production is from well 28H01, although production from individual wells may vary throughout the year (Hargis +

Associates, 1994). Collectively, these wells are the largest producers of groundwater within the study area.

9.3. Proposed Activities in the Area of Cumulative Analysis

9.3.1. Mining Operations

Proposed activities within the area of cumulative analysis include the Proposed Action, which is discussed in detail in Section 2.3; the Sanford Stone Company expansion; the Consolidated Mineral Resources Inc.'s (CMR's) West Rand Pilot Mill Project; and the Asphalt Construction expansion. The Proposed Action would disturb a total of 511 acres, 132 acres of which would be associated with the expansion of the open pits. The average water consumption over the 16-year period of operations and reclamation would be approximately 440 afpy (see Appendix E).

The Sanford Stone Company currently has proposed to conduct flagstone mining operations at a reclaimed mine site located in the NW¼ of Section 21, Township 30 South, Range 40 East. This operation would disturb approximately 100 acres, but would result in no increase in existing water usage (Taylor, 1993). As part of the Asphalt Construction currently being processed for their existing sand and gravel operations, an expansion to this existing operation has also been proposed in the permit application. The proposal would expand the existing operations by 355 acres. No additional water consumption would be anticipated with this expansion.

The CMR West Rand Pilot Mill Project, as proposed, would be a gold mining operation located in the SW¼ of Section 28, Township 30 South, Range 40 East. This operation would disturb approximately 20 acres and would result in the use of approximately 8.5 afpy of groundwater from the Fremont Valley. The proposal would be for a five (5) year mining operation.

9.3.2. Off-Highway Vehicle Use

Several changes to the existing routes for OHV use are proposed both in the RMC Proposed Action and the BLM's RMFVMA Plan. The RMFVMA Plan proposes to close the public access of approximately 70 acres of currently available off-road routes. RMC proposes to close off 2.5 acres of BLM Route 85 due to conflicts with proposed mining operations; however, in order to provide adequate alternative access, RMC also proposes to construct two (2) relocated access roads which will add approximately one (1) acre of disturbance (see Figure 2-8 and Figure 4-10). In addition, the BLM will identify the location for the new portion of the loop road from the Government Peak area to the Randsburg area, around the Rand Project boundary, to be constructed under the BLM transportation plan. The location and size of this route has not yet been determined, but is anticipated to cover approximately 15 acres.

9.4. Foreseeable Future Operations

The 15-year time frame for the reasonably foreseeable future scenario is from 1995 through 2010. The operations predicted in this scenario are anticipated to commence within the 15-year time frame, and are to be completed by, or extend beyond, the year 2010. No reasonably foreseeable future actions are associated with the irrigation wells, other than continuation of the existing usage.

9.4.1. Mineral Exploration and Development

Given the number of active and inactive mining operations in the northeastern Rand Mountains area, coupled with the mineral exploration activities in the area, continued mineral-related activities can be anticipated for the foreseeable future. This is supported by the geology and identified ore reserves and mineralization in the area. Therefore, Kern County and the BLM have developed the following scenario for the purpose of ascertaining the cumulative environmental impacts in the northeastern Rand Mountains area in the reasonably foreseeable future.

9.4.1.1. Exploration

Surface disturbance of five (5) acres per year would occur due to continued mineral exploration in the northeastern Rand Mountains area. This equates to approximately three (3) miles of new road each year, or 45 miles of road over a 15-year foreseeable future scenario. This scenario does not include the exploration activities under the Proposed Action.

9.4.1.2. Rand Project

RMC would continue assessment of its open pit reserves throughout the life of the mining operation. It is foreseeable that this assessment would identify additional ore reserves within the vicinity of the known pits which would require additional acreage to mine and process the ore. It is reasonable to expect that this scenario would include approximately 50 acres of disturbance associated with further expansions of the Yellow Aster, Baltic, Lamont and on-site satellite pits. To accommodate the produced ore from the on-site pit expansions and the development of foreseeable off-site satellite deposits, it is expected that the Descarga and Lamont Valley and Baltic heap leach pads will be expanded. The required heap leach expansions are expected to comprise 75 acres of disturbance. Waste rock would be accommodated by expanding the West Valley waste rock stockpile to the west and northwest and possibly expanding the Baltic waste rock stockpile on the north. Approximately 40 acres of disturbance is anticipated for these foreseeable waste rock stockpile expansions. Approximately an additional ten (10) afpy of water would be consumed as part of this expansion.

9.4.1.3. New Precious Metal Mine

It is foreseeable that a new precious metal open pit site could be developed at the site of the Buckboard Property, currently operated by Brenna Resources; however, both RMC and Brenna Resources presently hold mining claims in the area. The ore grade and size of the estimated Buckboard reserve indicates that the project would likely be developed as a satellite deposit to the

RMC operations, utilizing RMC's processing facilities. The mine would develop new disturbance associated with an open pit, waste rock stockpile, and haul roads. Ore could be hauled to the closest RMC processing facility. These activities would produce an estimated surface disturbance area of 80 acres, of which 30 acres would be for the open pit, and consume an estimated five (5) afpy of water.

A placer gold resource, referred to as the Baltic Channel, has been identified in Section 12 and 13, Township 30 South, Range 40 East (Taylor, 1993), but is currently undeveloped. It is foreseeable that this site could be developed in the future; however, a significant portion of the channel is located within an area designated as withdrawn from mineral development under the RMFVMA Plan, which would restrict the possible development of the resource to an area within the north half of Section 12. In addition, the southern ¾ of Section 13, Township 30 South, Range 40 East has been preliminarily identified by the USFWS as critical habitat for desert tortoise, which also could significantly reduce development potential. Under these restrictions, it is estimated that the development of this resource within the area north of the center of Section 12 would produce 50 acres of disturbance, and consume an estimated 300 afpy of water.

9.4.1.4. Flagstone Mining Operations

It is foreseeable that flagstone operations would continue throughout the 15-year time frame; however, current market trends indicate a potential slow down in flagstone consumption. Given this scenario, it is reasonable to expect only a moderate expansion of existing flagstone operations.

It is foreseeable that the Pruett Family would develop a flagstone mining operation on patented ground northwest of the Rand Project area. The development of this new mine is estimated to encompass approximately 40 acres of new disturbance. Employment would be approximately two (2) people. Water consumption is estimated to be approximately one (1) afpy and would be supplied to the site by truck from an off-site source.

It is reasonable to expect that within the 15-year foreseeable future period the Sanford Stone Company would expand current and proposed flagstone mining operations. Production at this site would likely be as much as 10,000 tons/yr and would encompass up to 20 acres of new disturbance. No new employment or additional water consumption would be anticipated.

9.4.1.5. Other Mining Operations

It is foreseeable that the sand and gravel operations and the existing placer mining operation would continue throughout the 15-year time frame. It is reasonable to expect a moderate expansion of these existing operations.

It is reasonable to expect that within the 15-year foreseeable future period the Boral Resources facility would expand current operations. Surface disturbance as a result of this expansion would likely be 50 acres and water consumption would increase by 17 afpy. Asphalt Construction would likely expand the existing and proposed operations, which would increase surface disturbance by 100 acres. However, water would continue to be supplied from outside the area of cumulative impacts study. Consolidated Placer Dredging would likely expand the existing placer operation by 25 acres and increase water consumption by 75 afpy.

9.4.2. Grazing Management

As a result of the current consultation between the BLM and the USFWS regarding the protection of desert tortoise habitat, the BLM sees two (2) possible foreseeable future scenarios for grazing within the cumulative assessment area. The common allotment would either be closed to grazing for the foreseeable future, or the amount of permitted grazing would be significantly limited, so that only a very reduced number of sheep would be allowed to graze. If grazing is allowed to continue within the area of cumulative analysis, there would be some surface disturbance associated with transport and grazing of the sheep, and the sheep would consume a certain amount of forage. However, a decision has not been made by the BLM on the amount, if any, of permitted use that would occur

within the area of cumulative analysis, and, therefore, a quantification of the foreseeable future impacts is not possible.

9.4.3. Off-Highway Vehicle Use

The intense use of the northeastern Rand Mountains area for OHV recreation will continue through the foreseeable future, particularly in the area around Randsburg. It is expected that there will be an increase in use because of the high percentage of unoccupied private land in the area and the unclassified nature of the interspersed public lands. This use will be slightly restricted on the private and public lands occupied by RMC's various operations. The OHV use in the area of cumulative analysis, particularly unrestricted use on unoccupied private land, would result in additional surface disturbance, which could be on the order of approximately three (3) acres per year.

9.5. Summary of Existing, Proposed and Reasonably Foreseeable Future Operations

Table 9-1 presents a summary of the existing, proposed, and reasonably foreseeable future disturbance acreage and water consumption within the cumulative impact study area. The total surface disturbance for listed existing activities in the area of cumulative analysis is approximately 1,325 acres, of which 193 acres are associated with open pits which will be reclaimed to the equivalent of the Level One reclamation guideline, including slope stabilization and limitation of public and wildlife access (see Section 2.3.7.1 for a discussion of reclamation levels). The total surface disturbance under proposed activities in the area of cumulative analysis is approximately 909.5 acres, of which 132 acres would be associated with open pits which will be reclaimed to the equivalent of the Level One reclamation guideline. The total surface disturbance under the reasonably foreseeable activities in the area of cumulative analysis is approximately 355 acres, of which 80 acres would be associated with open pits which will be reclaimed to the equivalent of the Level One reclamation guideline. Therefore, all listed existing, proposed, and reasonably foreseeable surface disturbance totals approximately 2,589.5 acres, of which 405 acres, consisting of 179 acres of public land and 226 acres of private land, would

Table 9-1: Summary of Surface Disturbance and Groundwater Consumption Under the Existing, Proposed and Reasonably Foreseeable Future Operations

SITE	DISTURBANCE (acres) TOTAL		DISTURBANCE (acres) OPEN PITS	TOTAL GROUNDWATER CONSUMPTION (acre-feet)[1] 1995 - 2009	AVERAGE ANNUAL GROUNDWATER CONSUMPTION (acre-feet)[1]
EXISTING OPERATIONS					
Rand Mining[1]	761.0		193.0	1,806.0	301.0
Consolidated Placer[2,3]	50.0		0.0	1,225.0	245.0
Sanford Stone[2]	178.0		0.0	0.0	0.0
Ulti Solutions[2]	81.0		0.0	0.0	0.0
Boral Resources[2]	70.0		0.0	510.0	34.0
Asphalt Construction[2]	45.0		0.0	0.0	0.0
American Minerals Management	10.0		0.0	0.0	0.0
Buckboard Project	5.0		0.0	0.0	0.0
RMC Exploration	5.0		0.0	0.0	0.0
Subtotal Existing Mining		1,205.0	193.0	3,541.0	580.0
Off-Highway Vehicle Use		120.0	0.0	0.0	0.0
Existing Agricultural Wells[4] (up to 6 wells)		0.0	0.0	101,325.0	6,755.0
Subtotal Existing Operations		1,325.0	193.0	104,866.0	7,335.0
PROPOSED ACTIVITIES					
Rand Project	511.0		132.0	7,041.0	440.0
West Rand Pilot Mill[2,3]	20.0		0.0	42.5	8.[illegible]
Sanford Stone[2]	100.0		0.0	0.0	0.0
Asphalt Construction[2]	355.0		0.0	0.0	0.0
Subtotal Proposed Mining		966.0	132.0	7,083.5	448.5
Off-Highway Vehicle Use		-56.5	0.0	0.0	0.0
Subtotal Proposed Activities		909.5	132.0	7,083.5	448.[illegible]
REASONABLY FORESEEABLE FUTURE ACTIVITIES					
Rand Project	165.0		50.0	150.0	10.0
Buckboard Property	80.0		30.0	75.0	5.0
Baltic Channel Placer[2]	50.0		0.0	4,500.0	300.0
Pruett[2]	40.0		0.0	0.0	0.0
Sanford Stone[2]	20.0		0.0	0.0	0.0
Boral Resources[2]	50.0		0.0	255.0	17.0
Asphalt Construction[2]	100.0		0.0	0.0	0.0
Consolidated Placer[2]	25.0		0.0	1,125.0	75.0
Exploration Activities	75.0		0.0	0.0	0.0
Subtotal Reasonably Foreseeable Mining		605.0	80.0	6,105.0	407.0
Off-Highway Vehicle Use		45.0	0.0	0.0	0.0
Subtotal Foreseeable Activities		650.0	80.0	6,105.0	407.0
TOTALS		2,884.5	405.0	118,054.5	8,190.5

1 Water consumption for the existing RMC operations would continue for only six (6) years, not for the entire 15-year Reasonably Foreseeable Future Scenario time period.

2 Mine pits associated with these properties will be reclaimed, and/or are assumed to be reclaimed, at a minimum of the equivalent of the Level Two reclamation guideline (see Section 2.3.7.1), and therefore are not considered a long-term impact on the specific resources of concern.

3 Water consumption for the existing CPD operations and the proposed CMR operations would continue for only five (5) years, not for the entire 15-year Reasonably Foreseeable Future Scenario time period.

4 Consumption value for irrigation wells includes an estimated 16 percent aquifer recharge rate from re-infiltration.

be associated with open pits which will be reclaimed to the equivalent of the Level One reclamation guideline.

The water consumption listed under existing activities in the area of cumulative analysis is approximately 7,335 afpy annual average and a total of 104,866 af over the 15-year reasonably foreseeable future scenario. The water consumption under proposed activities in the area of cumulative analysis is approximately 448.5 afpy annual average and a total of 7,083.5 af over the 15-year reasonably foreseeable future scenario. The additional water consumption due to reasonably foreseeable activities in the area of cumulative analysis is approximately 407 afpy annual average and a total of 6,105 af over the 15-year reasonably foreseeable future scenario. Therefore, all listed existing, proposed, and reasonably foreseeable water consumption totals approximately 8,190.5 afpy annual average and a total of 118,054.5 af over the 15-year reasonably foreseeable future scenario.

9.6. Evaluation of Potential Cumulative Impacts

Environmental consequences of the proposed Rand Project were evaluated in Chapter 5 for each environmental resource. Of the environmental resources evaluated in Chapter 5, only physiography, groundwater hydrology, air resources, and wildlife resources are considered to have the potential to be impacted to a degree that cumulative impact assessment of these resources is appropriate. Impacts to the other resources would not result in unavoidable adverse impacts that could be cumulatively important and are not evaluated in this chapter of the EIS/EIR.

9.6.1. Physiography

There is a cumulative impact to the physiography of the northeastern Rand Mountains area resulting from the total number of existing mining operations, exploration drill road construction and OHV use, which are summarized in Section 9.2. The total amount of surface disturbance resulting from the Proposed Action, which is outlined in Section 2.3, and the other activities in the area and the foreseeable future activities, which are outlined in Sections 9.3 and 9.4, is approximately 2,884.5 acres. The open pits, waste rock stockpiles and heap leach

pads represent a permanent change to the physiography of the area. However, the waste rock stockpiles and leach pads will be partially recontoured and reclaimed to minimize the impact to the physiography. The roads and other facilities associated with mining operations will be reclaimed, thus creating only a temporary change to the physiography of the area. The Proposed Action would create approximately 511 acres of surface disturbance, which is 17.7 percent of the total topography disturbed under the cumulative impact assessment in this Chapter.

9.6.2. Groundwater Hydrology

There is a cumulative impact to the groundwater hydrology of the northeast Fremont Valley area resulting from the Rand Project and existing groundwater production wells associated with mining operations, water districts and agricultural use, which are summarized in Section 9.2. The total amount of groundwater use resulting from the Proposed Action, which is outlined in Section 2.3, and the other activities in the area and the foreseeable future activities, which are outlined in Sections 9.3 and 9.4, is approximately 8,190.5 afpy annual average or 118,054.5 af over the 15-year reasonably foreseeable future scenario. The Proposed Action would result in an increase in groundwater use of approximately 440 afpy, averaged over the approximate 16-year life of the proposed activities, which is 5.4 percent of the total groundwater consumed on an annual basis for the first six (6) years of the Reasonably Foreseeable Future Scenario, and 5.6 percent of the total groundwater consumption on an annual basis for the remaining nine (9) years of the Reasonably Foreseeable Future Scenario after the existing RMC operations cease.

As previously described in Chapter 4 and Chapter 5, groundwater modeling was performed to evaluate the impact of the Rand Project on groundwater conditions and vegetation in the northern Fremont Valley in general, and the RCWD wells in particular. Modeling Case 4 evaluated the total impacts to the aquifer from the proposed Rand Project pumpage, including existing wells within the cumulative impact study area (Table 9-2). In addition to the Rand Project groundwater production, the major water producers included in the modeling runs

were the two (2) RCWD wells, three (3) CPD wells, and six (6) agricultural/irrigation wells in the southwest portion of the cumulative area which, after subtracting recharge of excess irrigation water, consume an average of 4,188 gpm (Hargis + Associates, 1994).

Table 9-2: Results of Northern Fremont Valley Groundwater Modeling - Case 4

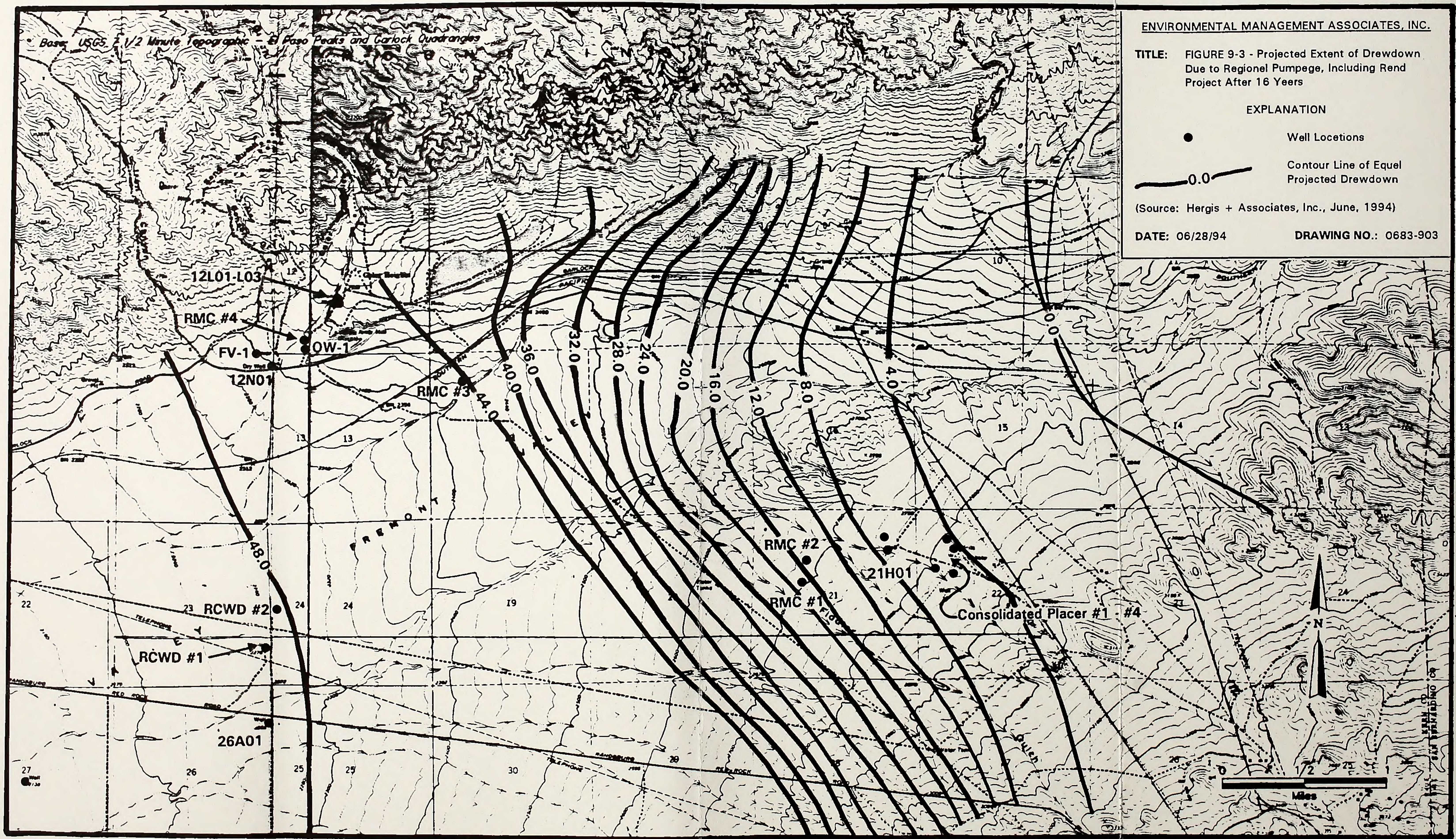
Model Run	Drawdown in the vicinity of RMC #4 (feet)			Drawdown in the vicinity of RCWD Wells (feet)		
	6 yr	12 yr	16 yr	6 yr	12 yr	16 yr
Case 4 - Proposed Rand Production and regional wells	39.2	50.6	47.1	27.1	43.6	48.4

[1] Hargis & Associates, Inc., June, 1994

Results of the modeling indicate that drawdown in the vicinity of the RCWD wells, including the influence of the all modeled groundwater withdrawals (Case 4), would amount to 47.1 feet at well RMC #4 after 16 years, and 48.4 feet at the RCWD wells after 16 years. These drawdowns are potentially significant. However, of these totals, the effect of the Rand Project water pumpage by itself is only a non-significant 5.4 feet in the vicinity of well RMC #4, and a non-significant 4.0 feet at the RCWD wells (see Figure 9-3).

Based on a comparison of the MODFLOW model results from Cases 3 and 4, the increased drawdown due to the Rand Project pumpage is similar whether only production well RMC #4 was included or whether all regional pumpage was included (Hargis + Associates, 1994). In the vicinity of the RCWD wells, approximately 3.4 feet of additional water level decline is projected after six (6) years of pumping for the Rand Project, while after 16 years of pumping for the Rand Project approximately 4.0 feet of additional water level decline was calculated. Actual drawdown may be higher due to well design inefficiencies or conditions such as incrusting (mineral deposits) on the well screen.

The impact on other valley wells was also calculated during the modeling. Drawdowns in the vicinity of the agricultural wells were 54.6 feet after 16 years,


Base: USGS 7 1/2 Minute Topographic - El Paso Peaks and Garlock Quadrangles
ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 9-3 - Projected Extent of Drawdown Due to Regionel Pumpege, Including Rend Project After 16 Yeers
EXPLANATION
Well Locetions
Contour Line of Equel Projected Drawdown
0.0
(Source: Hergis + Associates, Inc., June, 1994)
DATE: 06/28/94
DRAWING NO.: 0683-903
12L01-L03
RMC #4
FV-1
OW-1
12N01
RMC #3
RMC #2
RMC #1
21H01
Consolidated Placer #1 - #4
RCWD #2
RCWD #1
26A01
48.0
44.0
40.0
36.0
32.0
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
FREMONT
N
0
1/2
Miles

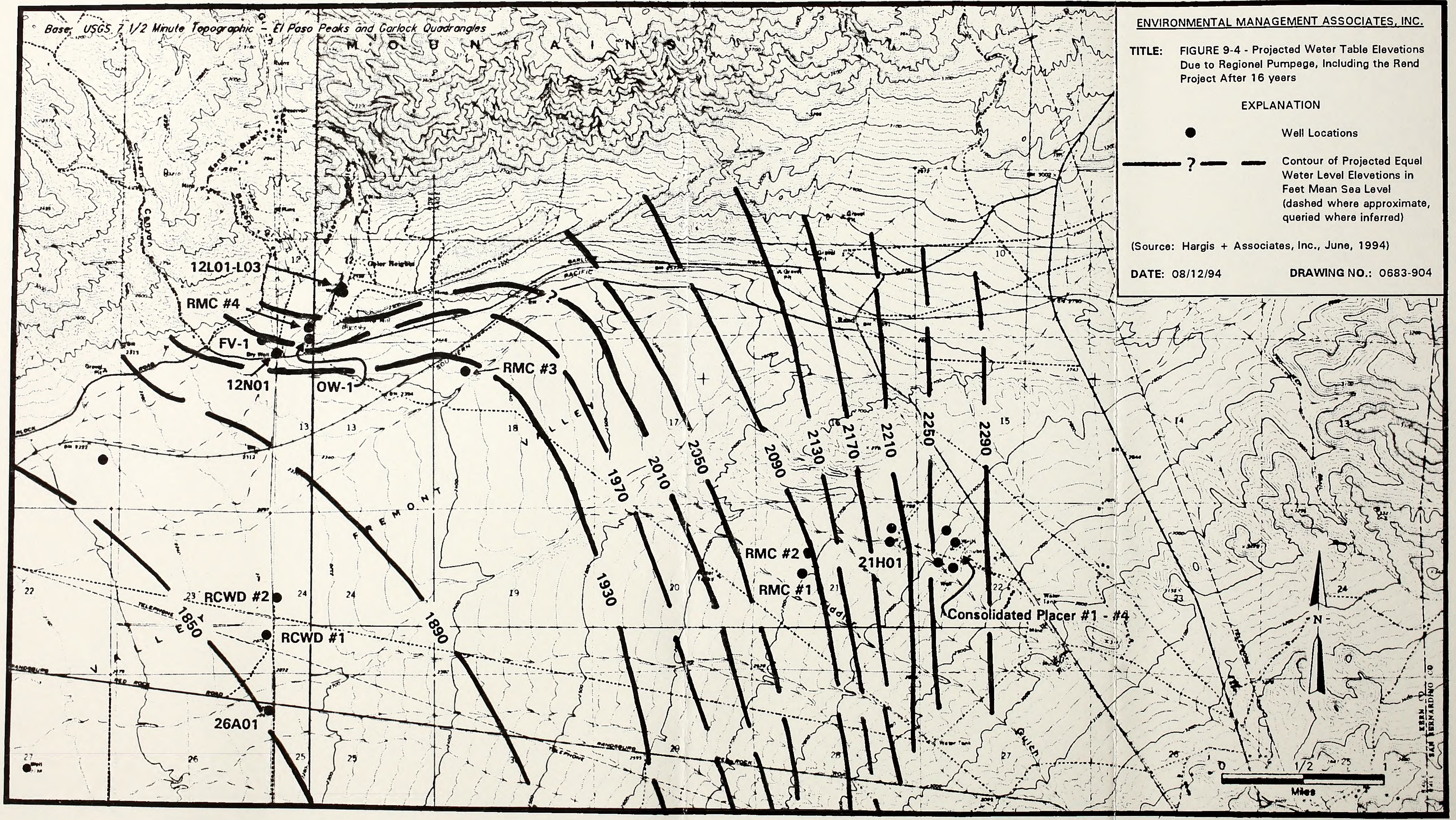
of which 2.8 feet of drawdown could be attributed to the Rand Project pumpage. Drawdown in the vicinity of Koehn Lake and the CPD wells was calculated at 34.0 feet and 4.9 feet respectively, of which 2.0 feet and 0.5 feet respectively, could be attributed to the Rand Project pumpage. The estimated water table elevations after 16 years of regional pumpage, including the Rand Project, are shown on Figure 9-4.

9.6.3. Air Resources

The cumulative short-term incremental increases in the impact of PM_{10}/TSP emissions over that of the Rand Project appear to be relatively minor, as the Rand Project is the largest source of these emissions within the cumulative study area. The Rand Project is the largest source of air toxics in the cumulative study area.

9.6.4. Wildlife Resources

Within the area of cumulative affect for this project, the BLM has established the RMFVMA, which is located to the west and northwest of the project area (Figure 4-10). The BLM's goal in the RMFVMA is to ensure a viable population of desert tortoise, and to identify the management actions necessary to meet that goal (USDI, 1993). The decline in the populations of the desert tortoise and the Mohave ground squirrel are at least partially due to human activities in the RMFVMA (USDI, 1993). Principal adverse human activities include OHV and mining activities. As a result of the analysis conducted in the Draft Habitat Management Plan (HMP) for the RMFVMA, the Draft HMP recommends, among other things, the closing of a majority of the RMFVMA to mineral entry and location, and designating that area as Class 1 habitat (USDI, 1989) (Figure 4-10). The remaining areas within the RMFVMA are not considered essential to the maintenance of viable desert tortoise and probable Mohave ground squirrel populations in the area. These areas would not be categorized for desert tortoise habitat and would remain open to mineral entry and location. The Rand Project is located in the area proposed to remain open to mineral entry.



Base: USGS 7 1/2 Minute Topographic - El Paso Peaks and Garlock Quadrangles
ENVIRONMENTAL MANAGEMENT ASSOCIATES, INC.
TITLE: FIGURE 9-4 - Projected Water Table Elevations Due to Regional Pumpage, Including the Rand Project After 16 years
EXPLANATION
Well Locations
Contour of Projected Equal Water Level Elevations in Feet Mean Sea Level (dashed where approximate, queried where inferred)
(Source: Hargis + Associates, Inc., June, 1994)
DATE: 08/12/94
DRAWING NO.: 0683-904
M O U N T A I N S
FREMONT
VALLEY
12L01-L03
RMC #4
FV-1
12N01
OW-1
RMC #3
RMC #2
RMC #1
21H01
RCWD #2
RCWD #1
26A01
Consolidated Placer #1 - #4
1850
1890
1930
1970
2010
2050
2090
2130
2170
2210
2250
2290
N
0
1/2
1
Miles

The wildlife species in the area of cumulative impacts that are the subject of a majority of the concern are the desert tortoise and, to a lesser degree, the Mohave ground squirrel. Impacts to the desert tortoise and the desert tortoise habitat result from the cumulative disturbance of 2,574.5 acres in the dominantly creosote brush scrub vegetation community created by mining operations, motorized vehicle traffic and increased predation from the increased human activity in the area. Mitigation measures to minimize the impacts to the desert tortoise and Mohave ground squirrel have been implemented for the existing mining projects, and impact reduction measures are proposed as part of the Proposed Action. In addition, these or equivalent mitigation measures would almost certainly be implemented for the foreseeable future mining actions. The use of the area for the grazing of sheep is currently being assessed to determine what additional measures should be implemented to minimize grazing impacts to the desert tortoise and Mohave ground squirrel. Although there is no way to specifically quantify the current level of impacts to the desert tortoise and Mohave ground squirrel, the Proposed Action would result in some incremental increase to the local existing cumulative impacts.

CHAPTER 10
COORDINATION AND CONTACTS

10. COORDINATION AND CONTACTS

The following individuals, organizations, and agency representatives were contacted during the preparation of this EIS/EIR. Where appropriate, specific communications are identified as a reference (see Chapter 13, References).

State of California Agencies

California Regional Water Quality Control Board - Lahontan Region
Ted Sari, Engineer
Jay Cass, Engineer

County of Kern Agencies

Kern County Department of Public Works
Ty Cannon, Traffic Engineer

Kern County Department of Environmental Health Services
Mike Gnekow, Environmental Planner
Bill O'Rulliam, Environmental Planner

Kern County Planning Department
Scott Denney, Planner

County of San Bernardino

San Bernardino Planning Department
Andrew Rush, Planner

Private Organizations

Boral Resources
Ken Barker, Environmental Coordinator

Gear Grinders Club
Jerry Grimsley, Director

Individuals

Ted Rado, Wildlife Biologist

CHAPTER 11
LIST OF PARTICIPANTS

11. LIST OF PARTICIPANTS

This Environmental Impact Statement/Environmental Impact Report (EIS/EIR) was prepared by Environmental Management Associates, Inc. (EMA) under a contract with Rand Mining Company (RMC), under the general guidance of the Environmental Analysis Section of the Kern County Planning Department in Bakersfield, California and Mr. Dave Taylor, Mr. Ahmed Mohsen and Mr. Buzz Todd of the Bureau of Land Management, Ridgecrest Resource Area Office in Ridgecrest, California. The following is a list of individuals responsible for preparation of the EIS/EIR.

BLM personnel include:

Greg Thomsen, Resources Staff Chief, Ridgecrest Resource Area (RRA), California Desert District (CDD), BLM

Linn Gum, Supervisory Geologist, Project Lead, RRA, CDD, BLM

Buzz Todd, EIS Team Leader, RRA, CDD, BLM

Glenn Harris, Soil, Water, Air and Plants Specialist, RRA, CDD, BLM

Bob Parker, Wildlife Biologist, RRA, CDD, BLM

Curt Gunn, Hazmat Specialist, RRA, CDD, BLM

Dave Wash, Visual Resources and Recreation Specialist, RRA, CDD, BLM

Jim Keeler, Recreational Specialist, RRA, CDD, BLM

Ahmed Mohsen, Resource Management Specialist, NEPA Coordinator, RRA, CDD, BLM

Dan Fowler, Archeologist, RRA, CDD, BLM

Joyce Schlacter, Wildlife Biologist, RRA, CDD, BLM

Dave Taylor, Geologist, BLM

Katherine Wash, Wilderness Specialist, RRA, CDD, BLM

Molly Brady, Chief Planning and Renewable Resources (P&RR), CDD, BLM

Doug Romoli, P&RR Staff, CDD, BLM

Rob Waiwood, District Geologist, CDD, BLM

Bob Anderson, Deputy State Director, Minerals Resources, California State Office (CSO), BLM

Jack Mills, Environmental Coordinator, CSO, BLM

Jim Hamilton, Mining Engineer, CSO, BLM

EMA personnel include:

Dr. Dwight L. Carey
Principal
D.Env. Environmental Science and Engineering, 1982, University of California, Los Angeles
M.S. Geology, 1976, University of California, Los Angeles
B.S. Geology, 1972, California Institute of Technology

Environmental professional who has managed various types of projects over 20 years, including:

- Environmental Impact Statements, Environmental Impact Reports, and Environmental Assessments
- Waste Discharge Requirement Applications, including Underground Injection Control Applications and Air Quality Impact Analyses
- Preparation of Federal, State, and Local Permit Applications for Natural Resource Development Projects

EIS/EIR principal areas of responsibility: quality control, proposed action, air resources and hydrology resources.

Richard F. DeLong
Senior Environmental Specialist
M.S. Geology, 1986, University of Idaho
M.S. Resource Management, 1984, University of Idaho
B.A. Geology, 1980, California State University, Chico

Environmental professional with 15 years of experience in environmental analysis, environmental baseline data collection and assessment, and regulatory analysis, including:

- Comprehensive and Focused Environmental Assessments, Environmental Impacts Statements and Environmental Impact Reports
- Technical Reports Including Regulatory Impact Analysis, Visual Impact Analysis and Noise Impact Analysis
- Permit Acquisition Activities for Natural Resource Development Projects

EIS/EIR principal areas of responsibility: Principal document preparer, NEPA/CEQA compliance, introduction, alternatives, wildlife, water resources, land use, socioeconomics and cumulative impacts analysis.

Teressa C. Casaceli
Senior Environmental Specialist
B.A. Geology, 1980, Hartwick College

Six (6) years of experience as an environmental manager and ten (10) years of experience as a geologist and minerals resource specialist including:

- Environmental Assessments and Environmental Impact Statements
- Preparation of Federal, State, and Local Permit Applications for Natural Resource Development Projects
- Federal Plans of Operations
- Environmental Audits and Site Assessments

EIS/EIR principal areas of responsibility: Cumulative impacts and project description.

Ellen D. Leavitt
Environmental Specialist
M.S. Geology, 1980, University of Oregon
B.A. Geology, 1975, Middlebury College

Five (5) years of experience as an environmental specialist and five (5) years of experience as a minerals industry geologist including:

- Environmental Assessments and Environmental Impact Statements
- Regulatory Compliance Analysis
- Preparation of Federal, State, and Local Permit Applications for Natural Resource Development Projects
- Coordination of Environmental Baseline Surveys
- Environmental Audits and Site Assessments

EIS/EIR principal areas of responsibility: Soils and quality control.

John P. Gilmore
Environmental Specialist
B.S. Range and Forest Management, 1981, Colorado State University

Five (5) years of experience as an environmental specialist for various projects including:

- Federal Plans of Operation
- Environmental Assessments
- Preparation of Federal, State, and Local Permit Applications for Natural Resource Development Projects
- Environmental and Compliance Audits

EIS/EIR principal areas of responsibility: Vegetation, range and soils.

Mark R. Hanneman
Environmental Specialist
M.S. Economic Geology, 1987, Colorado State University
B.S. Geology, 1979, University of Wisconsin at Madison

Fifteen (15) years of experience as a geologist and minerals resource specialist including:

- Preparation of Federal, State, and Local Permit Applications for Mining Development Projects
- Plans of Operations
- Environmental Audits
- Reclamation Plans

EIS/EIR principal areas of responsibility: Mineral resources, geology, and physiography.

Joseph M. DeStefano II
Environmental Regulatory Analyst
B.A. Political Science (Public Policy), 1992, Loyola Marymount University, Los Angeles
S.T.B. Medieval Spirituality, 1991, Loyola Marymount University, Los Angeles

Three (3) years of experience as a regulatory analyst and two (2) years of experience providing technical assistance in computerized air quality modeling analysis including:

- Air quality assessments
- Meteorological research and data review
- Computer air dispersion modelling

EIS/EIR principal areas of responsibility: Meteorology and air quality.

Scott Nikaido
Associate
B.S. Chemical Engineering, 1982, University of California, Los Angeles

Five (5) years of experience as an associate environmental scientist specializing in air quality impact analysis including:

- Air quality assessments
- Air dispersion modelling

EIS/EIR principal areas of responsibility: Air quality.

Peter Woodman

Associate
B.A. Biology, 1978, California State University, Fresno

Fifteen (15) years of experience as a biologist working in the Mojave Desert area with activities including:

- Assessments of Desert Tortoise and Desert Tortoise Habitat
- Designing and Implementing Mitigation and Monitoring Methods for Desert Tortoise Impacts
- Conducting Inventories for Mammal, Reptile and Avian Species

EIS/EIR principal areas of responsibility: Desert tortoise impact assessment review.

Richard Dodge

Associate
Ph.D., Plant Science, 1963, University of Arizona, Tucson
A.B. Biology, 1957, San Francisco State University

Thirty (30) years of experience as a botanist and arid land plant specialist including:

- Botanical expertise for Environmental Assessments and Reclamation Plans
- Soil expertise for Environmental Assessments and Reclamation Plans

EIS/EIR principal areas of responsibility: Vegetation impact assessment review and revegetation success assessment review.

Patricia Brown

Associate
Ph.D., Biology, 1973, University of California, Los Angeles
B.A. Zoology, 1968, University of California, Los Angeles

Twenty (20) years of experience as a biological resource expert for various projects including:

- Biological surveys specializing in California biota including bat populations, Mohave Ground Squirrel, and Desert Tortoise

EIS/EIR principal areas of responsibility: Bats impact assessment review.

Donald Hardesty
Associate
Ph.D., Anthropology, 1972, University of Oregon
M.A., Anthropology, 1967, University of Oregon
B.A. Anthropology, 1964, University of Kentucky

Twenty-five (25) years of experience as a anthropologist, which includes:

- Anthropological and Archaeological Studies of Western U.S. Mining Camps and Towns and Westward U.S. Migration
- Development of Management Plans for Historic Archaeological Resources

EIS/EIR principal areas of responsibility: Cultural resources impact assessment review.

CHAPTER 12
PUBLIC REVIEW, COMMENTS AND RESPONSES

12. PUBLIC REVIEW, COMMENTS AND RESPONSES

12.1. Public Review Process

The Rand Project Draft EIS/EIR was distributed in October of 1994 for public review and comment to interested parties on lists maintained by the BLM and the KCPD. Copies of the Draft EIS/EIR were also distributed to other federal, state and local agencies by the BLM and KCPD, and the California State Clearinghouse also distributed copies to state agencies. A Notice of Availability was filed with the EPA, by the BLM and published in the Federal Register on October 21, 1994. The KCPD filed a Notice of Completion with the State of California Office of Planning and Research and the Kern County Clerk. The BLM held a public meeting on the Draft EIS/EIR on December 7, 1994 in the town of Johannesburg, California, at which oral comments on the Draft EIS/EIR were received.

12.2. Comments Received

Both written and oral comments (recorded at the December 7, 1994 hearing on the Draft EIS/EIR) were received during the public comment period. Each comment document received was assigned a comment document number, based on the date the comment document was received. A list of all comment documents by comment document number, the name of the commentor, the commentor's agency or affiliation, and the date of the comment document, is provided in Table 12-1. Copies of all comment documents received are provided in Section 12.2.2.

12.2.1. Comment Codes

Each substantive comment within each comment document was given a comment code, consisting of the comment document number containing that comment, followed by a "dash", followed by the number of the comment in that comment document (for example, Comment 11-5 is the fifth comment in comment document 11). In some cases, comments were further subdivided, and the comment codes for these subdivisions were indicated by adding an "a", "b", etc., to the end of the comment code (for example, Comment 12-7b). Table 12-2,

the Comment and Response Index, lists all the comments received by commentor name and agency/affiliation, identifies each substantive comment by comment code, provides the page number in the Final EIS/EIR where the response to the comment can be found, and identifies the general topic covered by the comment.

Table 12-1: List of Comment Documents Received

1. Chris Gentry, National Park Service. No Date.
2. Robert Ruhnke, California Department of Transportation. October 25, 1994.
3. Fred Simon, Kern County Transportation Management Department. November 1, 1994.
4. Robert D. Johnstone, Air Force Flight Test Center, Edwards Air Force Base. November 7, 1994.
5. Dusty Hill, Boron, California. November 19, 1994.
6. Dusty Hill, Boron, California. November 19, 1994.
7. Dusty Hill, Boron, California. November 19, 1994.
8. Dusty Hill, Boron, California. November 19, 1994.
9. Jason Marshall, California Resource Agency. November 23, 1994.
10. Dusty Hill, Boron, California. December 2, 1994.
11. Dusty Hill, Boron, California. December 2, 1994.
12. John R. Swanson, Minneapolis, Minnesota. December 2, 1994.
13. Stan Haye, California/Nevada RCC Mining Committee, Sierra Club. December 2, 1994.
14. Vernon H. Persson, California Division of Safety of Dams. December 5, 1994.
15. Mrs. Carie, Randsburg, California. December 7, 1994.
16. Public Scoping Meeting. December 7, 1994.
17. Michael Chiriatti, State Clearinghouse. December 8, 1994.
18. John Thornton, NBS/Lowry Inc. December 15, 1994.
19. J. Robert Lyche, Johannesburg, California. December 16, 1994.
20. Jeanie Stillwell Haye, Owens Peak Group Sierra Club. December 17, 1994.
21. Norman T. Caouette, Mojave Water Agency. December 19, 1994.
22. Don Frost, Randsburg, California. December 19, 1994.
23. Barry W. Kenady, Naval Air Weapons Station, China Lake, California. December 20, 1994.
24. David J. Farrel, U.S. Environmental Protection Agency, Region IX. December 20, 1994.
25. Scott Denney, Kern County Planning Department. December 20, 1994.
26. Ranjit Gill, California Regional Water Quality Control Board - Lahontan Region. December 20, 1994.
27. Gene Barilotti, Oceanside California, No date.

Comments generally fell into two (2) categories: those comments which addressed the content or format of the Draft EIS/EIR; and those comments which addressed the permit review process, agency discretionary authority, posed theoretical questions, or presented value statements about the project proponent or responsible agencies. All of the latter comments were noted in Table 12-2, and where appropriate, considered by the responsible agencies in their permit application review process. No further response to these comments in the EIS/EIR was necessary.

Table 12-2: Comment Index

INDEX TO COMMENTS AND RESPONSES			
Name Agency/Affiliation	Comment Code	Response Page No.	Topic
Chris Gentry/Dan Olsen National Park Service	1-1		No comment
Robert J. Ruhnke California Department of Transportation	2-1		No comment
Fred Simon Kern County Transportation Management Department	3-1		Comment noted
Robert D. Johnstone Air Force Flight Test Center, Edwards Air Force Base	4-1		No comment
Dusty Hill	5-1 5-2	12-91 12-104	Proposed Action Physiography and Geology
Dusty Hill	6-1		Comment noted
Dusty Hill	7-1	12-90	Previously Approved Operations
Dusty Hill	8-1	12-91	Proposed Action

INDEX TO COMMENTS AND RESPONSES			
Name Agency/Affiliation	Comment Code	Response Page No.	Topic
Jason Marshall State of California Department of Conservation	9-1 9-2 9-3 9-4 9-5 9-6 9-7	12-104 12-104 12-96 12-118 12-93 12-96 12-93	Physiography and Geology Physiography and Geology Proposed Action Proposed Action Proposed Action Proposed Action Proposed Action
Dusty Hill	10-1	12-113	Hydrology - Groundwater
Dusty Hill	11-1	12-89	Previously Approved Operations
John Swanson	12-1		Comments noted
Stan Haye Sierra Club	13-1 13-2 13-3a 13-3b 13-4 13-5 13-6 13-7a 13-7b 13-7c 13-8 13-9 13-10a 13-10b 13-11 13-12 13-13 13-14 13-15 13-16 13-17	12-93 12-94 12-97 12-99 12-101 12-102 12-108 12-119 12-94 12-120 12-120 12-117 12-87 12-119 12-115 12-118 12-87 12-119 12-88 	Proposed Action Proposed Action Proposed Action Alternatives Hydrology - Groundwater Alternatives Hydrology - Groundwater Visual Resources Proposed Action Visual Resources Comment noted Socioeconomics Air Quality General Comments Wildlife Resources Hydrology - Groundwater Vegetation and Range Resources General Comments Visual Resources General Comments Comment noted
Vernon Persson California Department of Water Resources, Division of Safety of Dams	14-1	12-91	Proposed Action
Mrs. Carie	15-1		Comment noted

INDEX TO COMMENTS AND RESPONSES			
Name Agency/Affiliation	Comment Code	Response Page No.	Topic
Public Scoping Meeting	16-1	12-96	Proposed Action
	16-2	12-96	Proposed Action
	16-3	12-88	General Comments
	16-4	12-120	Socioeconomics
	16-5a	12-117	Air Quality
	16-5b	12-90	Hydrology - Surface Water
	16-6	12-117	Air Quality
	16-7	12-116	Air Quality
	16-8	12-92	Proposed Action
	16-9	12-110	Hydrology - Groundwater
	16-10	12-101	Alternatives
	16-11	12-104	Geology
	16-12	12-108	Proposed Action
	16-13	12-116	Air Quality
	16-14	12-116	Air Quality
	16-15	12-117	Air Quality
	16-16	12-116	Air Quality
	16-17	12-113	Hydrology - Groundwater
	16-18	12-113	Hydrology - Groundwater
	16-19	12-120	Socioeconomics
	16-20	12-120	Socioeconomics
	16-21	12-120	Socioeconomics
	16-22	12-121	Socioeconomics
	16-23	12-113	Hydrology - Groundwater
	16-24	12-102	Alternatives
	16-25	12-110	Hydrology - Groundwater
	16-26	12-112	Hydrology - Groundwater
Michael Chiriatti State Clearinghouse	17-1		No comment

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	18-2	12-96	Proposed Action
	18-3	12-88	General Comments
	18-4	12-97	Proposed Action
	18-5	12-91	Proposed Action
	18-6	12-106	Hydrology - Surface Water
	18-7	12-117	Air Quality
	18-8	12-119	Wildlife
	18-9a	12-121	Cumulative Impacts
	18-9b	12-121	Cumulative Impacts
	18-10	12-117	Air Quality
	18-11	12-88	General Comments
	18-12	12-88	General Comments
	18-13	12-90	Proposed Action
	18-14	12-109	Hydrology - Groundwater
	18-15	12-109	Hydrology - Groundwater
	18-16	12-110	Hydrology - Groundwater
	18-17	12-110	Hydrology - Groundwater
	18-18	12-110	Hydrology - Groundwater
	18-19	12-111	Hydrology - Groundwater
	18-20	12-112	Hydrology - Groundwater
	18-21a	12-115	Hydrology - Groundwater
	18-21b	12-108	Hydrology - Groundwater
	18-21c	12-108	Hydrology - Groundwater
	18-22	12-101	Alternatives
	18-23	12-112	Hydrology - Groundwater
	18-24	12-112	Hydrology - Groundwater
J. Robert Lyche	19-1	12-117	Air Quality
Jeanie Stillwell Haye Sierra Club	20-1a		Comment noted
	20-1b	12-99	Alternatives
	20-2a	12-97	Proposed Action
	20-2b	12-120	Visual Resources
	20-3	12-87	General Comments
	20-4	12-108	Hydrology - Groundwater
	20-5	12-88	General Comments
Norman Caouette Mojave Water Agency	21-1	12-105	Hydrology - Groundwater/Surface Water
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	21-3	12-115	Hydrology - Groundwater

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	22-2	12-108	Hydrology - Groundwater
Barry W. Kenady	23-1	12-120	Land Use and Wilderness
Naval Air Weapons Station	23-2	12-90	Proposed Action
China Lake	23-3	12-120	Land Use and Wilderness
David J. Farrel	24-1	12-101	Alternatives
U.S. Environmental	24-2	12-107	Hydrology - Surface Water
Protection Agency,	24-3	12-106	Hydrology - Surface Water
Region IX	24-4	12-120	Land Use and Wilderness
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Scott F. Denney	25-1a	12-93	Proposed Action
Kern County Planning	25-1b	12-93	Proposed Action
Department	25-2a	12-94	Proposed Action
	25-2b	12-95	Proposed Action
	25-2c	12-95	Proposed Action
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	25-3b	12-96	Proposed Action
	25-3c	12-97	Proposed Action

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California Regional Water	26-1b	12-91	Proposed Action
Quality Control Board,	26-2a	12-89	Previously Approved Operations
Lahontan Region	26-2b	12-89	Previously Approved Operations
	26-3a	12-114	Alternatives
	26-3b	12-103	Alternatives
	26-3c	12-103	Alternatives
	26-4	12-106	Hydrology - Surface Water
	26-5a	12-91	Proposed Action
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	26-6	12-92	Proposed Action
	26-7	12-91	Proposed Action
	26-8	12-114	Hydrology - Groundwater
	26-9	12-95	Proposed Action
	26-10	12-101	Alternatives
	26-11a	12-103	Alternatives
	26-11b	12-103	Alternatives
	26-12	12-105	Hydrology - Surface Water
	26-13	12-105	Hydrology - Surface Water
	26-14		Comment noted
Gene Barilotti	27-1	12-92	Proposed Action
	27-2	12-108	Hydrology - Groundwater
	27-3	12-92	Proposed Action
	27-4	12-116	Hydrology - Groundwater
	27-5	12-116	Hydrology - Groundwater
	27-6a	12-108	Hydrology - Groundwater
	27-6b	12-113	Hydrology - Groundwater
	27-7a		Comment noted
	27-7b	12-121	Noise
	27-8a	12-92	Proposed Action
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12.2.2. Comment Documents

Copies of all comment documents received, including the comments from the public meeting held on December 7, 1994, follow. Each substantive comment within each comment document has been indicated by a bar, placed on the left side of the comment, and its comment code, as described in Section 12.2.

Comment
Document
No. 1

MEMORANDUM
OF CALL

Previous editions usable

TO: Lee / Henri

☑ YOU WERE CALLED BY— ☐ YOU WERE VISITED BY—

Chris Gentry / Dan Olsen

OF (Organization) NPS

☐ PLEASE PHONE ▶ ☐ FTS ☐ AUTOVON

415 744 - 3968

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☑ WISHES AN APPOINTMENT

1-1 MESSAGE

"no comment" on Road EIS

RECEIVED BY | DATE | TIME recorder

63-110 NSN 7540-00-634-4018 STANDARD FORM 63 (Rev. 8-81) Prescribed by GSA FPMR (41 CFR) 101—11.6

☆ U.S.G.P.O. 1994 300-891/80022

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, *Governor*

DEPARTMENT OF TRANSPORTATION
500 SOUTH MAIN STREET
BISHOP, CA 93514
619-872-0689

Comment
Document
No. 2

October 25, 1994

File: Ker-395-1.152

Kern County Planning Dept.
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Attention: Bill Larsen

PROJECT TITLE: EA 23-92; Cup 4, Map 115; Cup 8, Map 115-35; Cup 9, Map 136
(Rand Project) SCH #93042054

2-1 We have reviewed the above-referenced document and have no additional comments to offer.

ROBERT J. RUHNKE
Transportation Planning
Branch B

RJR:pd

TRANSPORTATION MANAGEMENT DEPARTMENT
WILLIAM A. SUITOR, P.E., Director
2700 "M" STREET, SUITE 400
BAKERSFIELD, CA 93301
Phone: (805) 861-2481
FAX: (805) 324-1715

RESOURCE MANAGEMENT AGENCY
JOEL HEINRICHS, AGENCY DIRECTOR
Air Pollution Control District
Engineering & Survey Services Department
Planning & Development Services Department
Transportation Management Department
Waste Management Department

Comment
Document
No. 3

November 1, 1994

BLM-Ridgecrest Resource Area
Attention Ahmed Mohsen
300 South Richmond Boulevard
Ridgecrest, CA 93555

Dear Mr. Mohsen:

Re: 7-8.1 Draft Environmental Impact Statement/Environmental Impact Report for Rand Project, Randsburg

3-1 Thank you for the opportunity to comment upon the above noted project. We have no comments at this time, and will provide specific recommendations during CUP review as part of the Kern County Planning Department action. We note, however, that any access to a County road will require an encroachment permit issued by this Department.

Very truly yours,

Fred Simon
Principal Planner

FS:ab
L33.D76
cc: Planning Department
Attn: Bill Larsen

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)
EDWARDS AIR FORCE BASE, CALIFORNIA

Comment
Document
No. 4

7 Nov 94

AFFTC/XPX
1 South Rosamond Blvd.
Edwards AFB CA 93524-1036

Kern County Dept of Planning and Development Services
ATTN: Bill Larsen
2700 "M" Street, Suite 100
Bakersfield CA 93301

Dear Mr Larsen

4-1 Thank you for the opportunity to comment on the Draft Environmental Impact Statement/Environmental Impact Report for the Rand Gold Mine Expansion. Based on the information provided, the Air Force Flight Test Center (AFFTC) at Edwards Air Force Base has no comments regarding the proposal.

The AFFTC appreciates the continued efforts of your department in assuring compatible land use in the Kern County area. This office is committed to providing accurate and timely feedback. Please contact David Rose or the undersigned at (805) 277-3837 to comment or for further assistance.

Sincerely

Robert D Johnstone

ROBERT D. JOHNSTONE
Chief, Plans Division

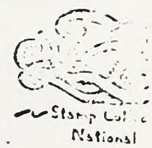
Comment
Document
No. 5

Molly;

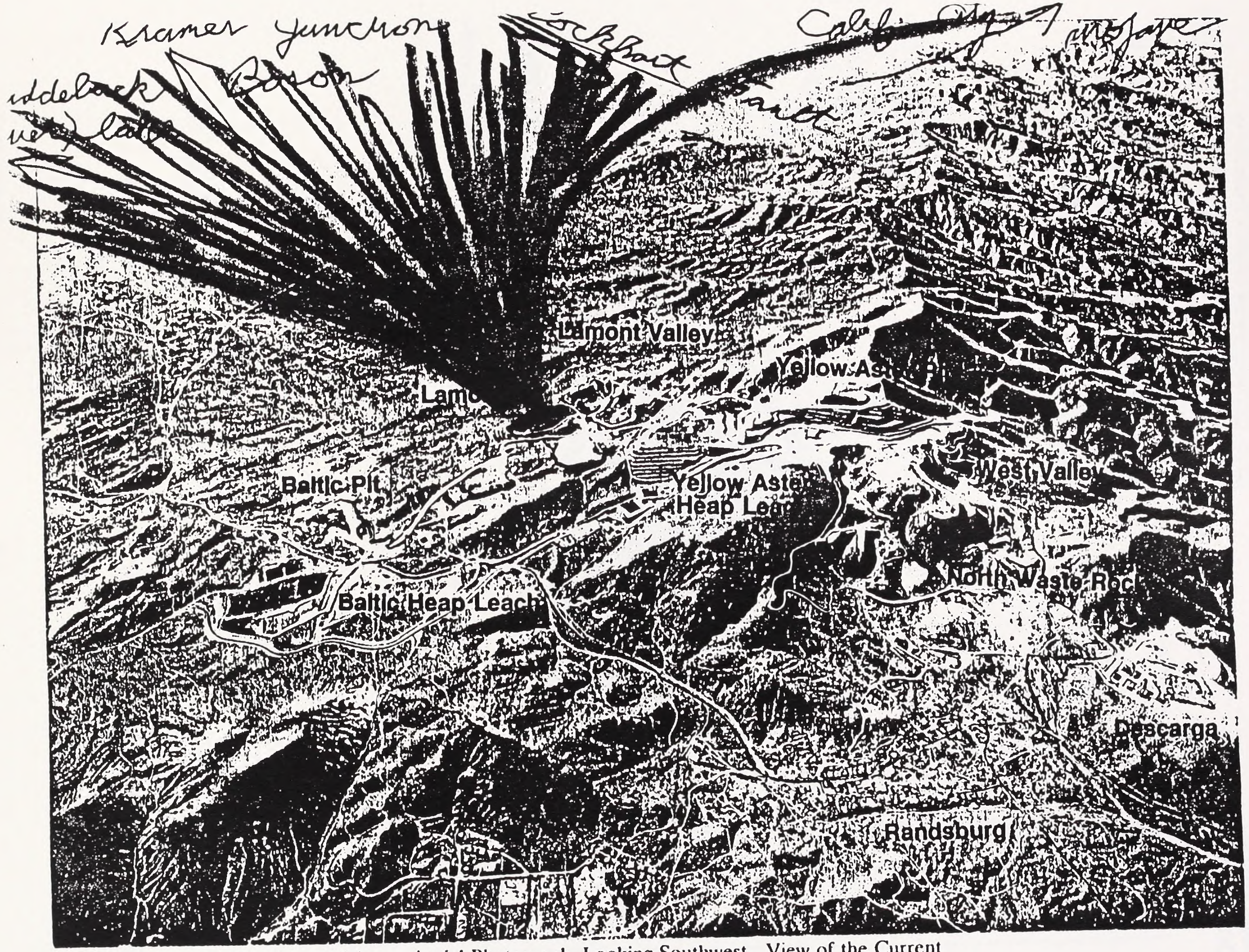
5-1 what happens to water if you pump it up a hill?

Dusty Hill
Box 305
Boron, Ca.
93516

VAN NUYS CA
PM
19 NOV
1994



Molly Brady
BLM
300 S. Richmond
Ridgecrest, Ca.
93555



Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations.

5-2

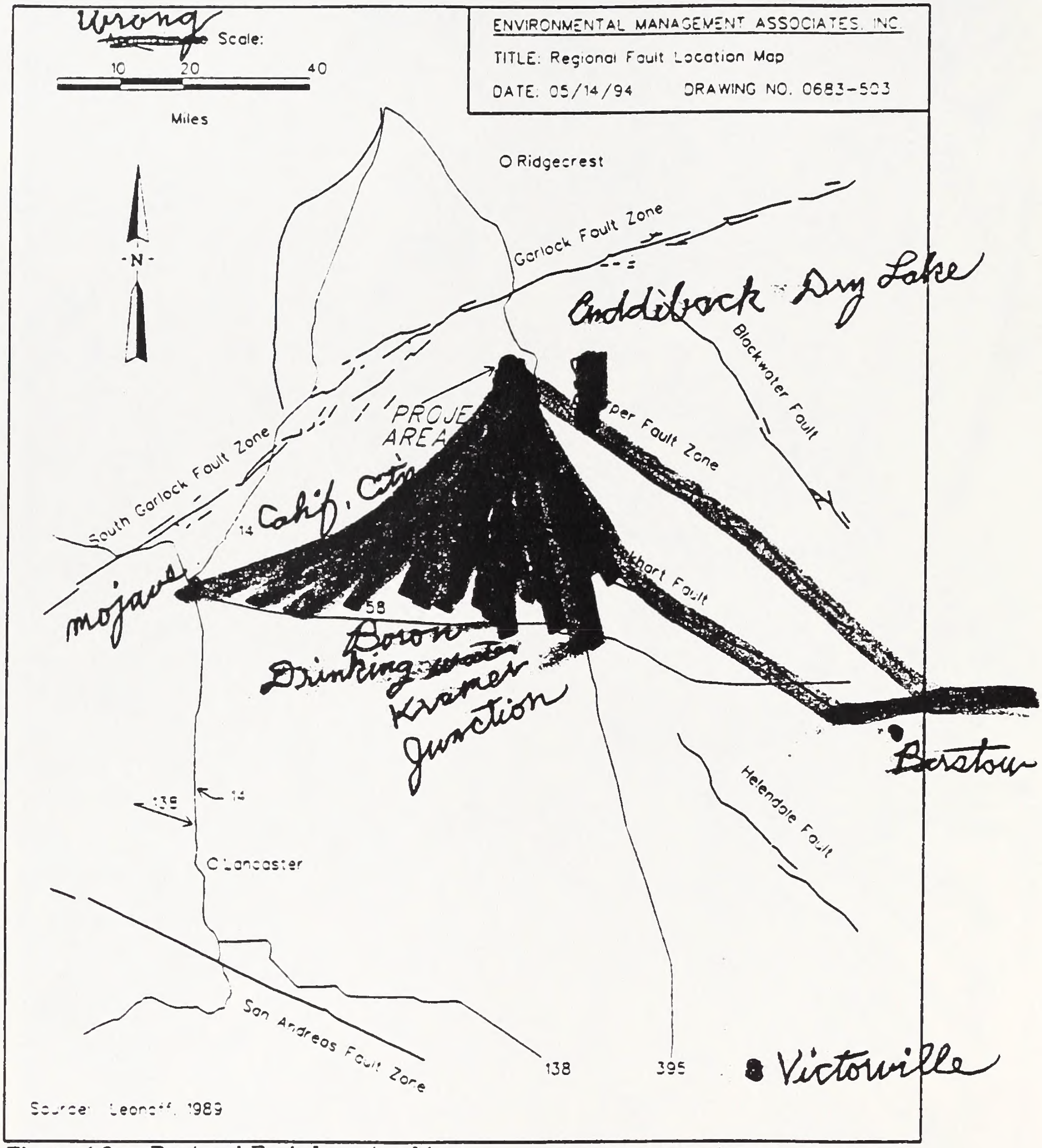


Figure 4-3: Regional Fault Location Map

mojave river

Comment
Document
No. 6

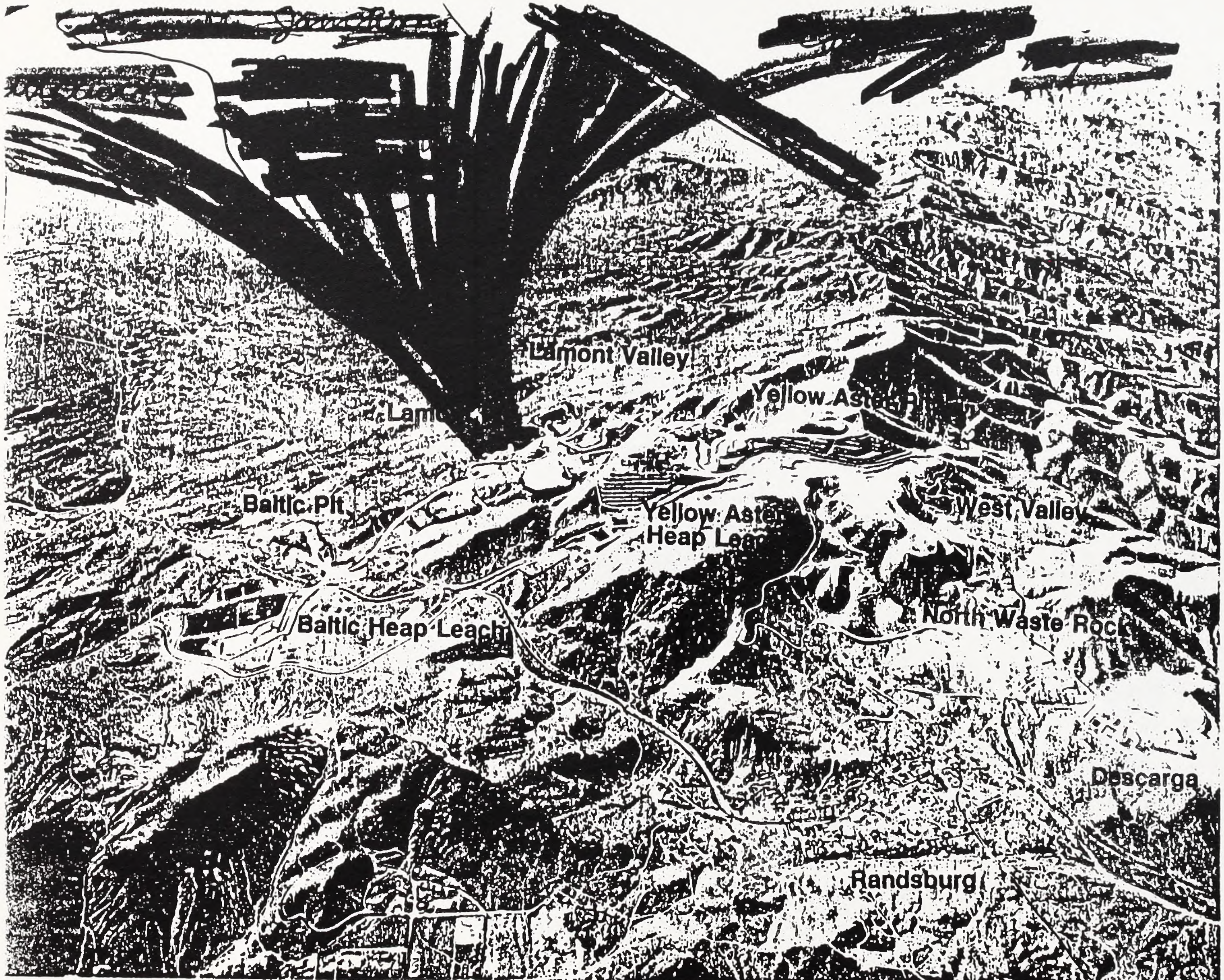
Linn;

6-1 Rand mining Co. has [redacted] lied to us!

Dusty Hill
Box 305
Boron, Ca.
93516

VAN NUYS CA 914 3A
PM
19 ...
1994

Linn Gum
BLM
300 S Richmond
Ridgecrest, Ca.
93555



Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations

RECEIVED
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

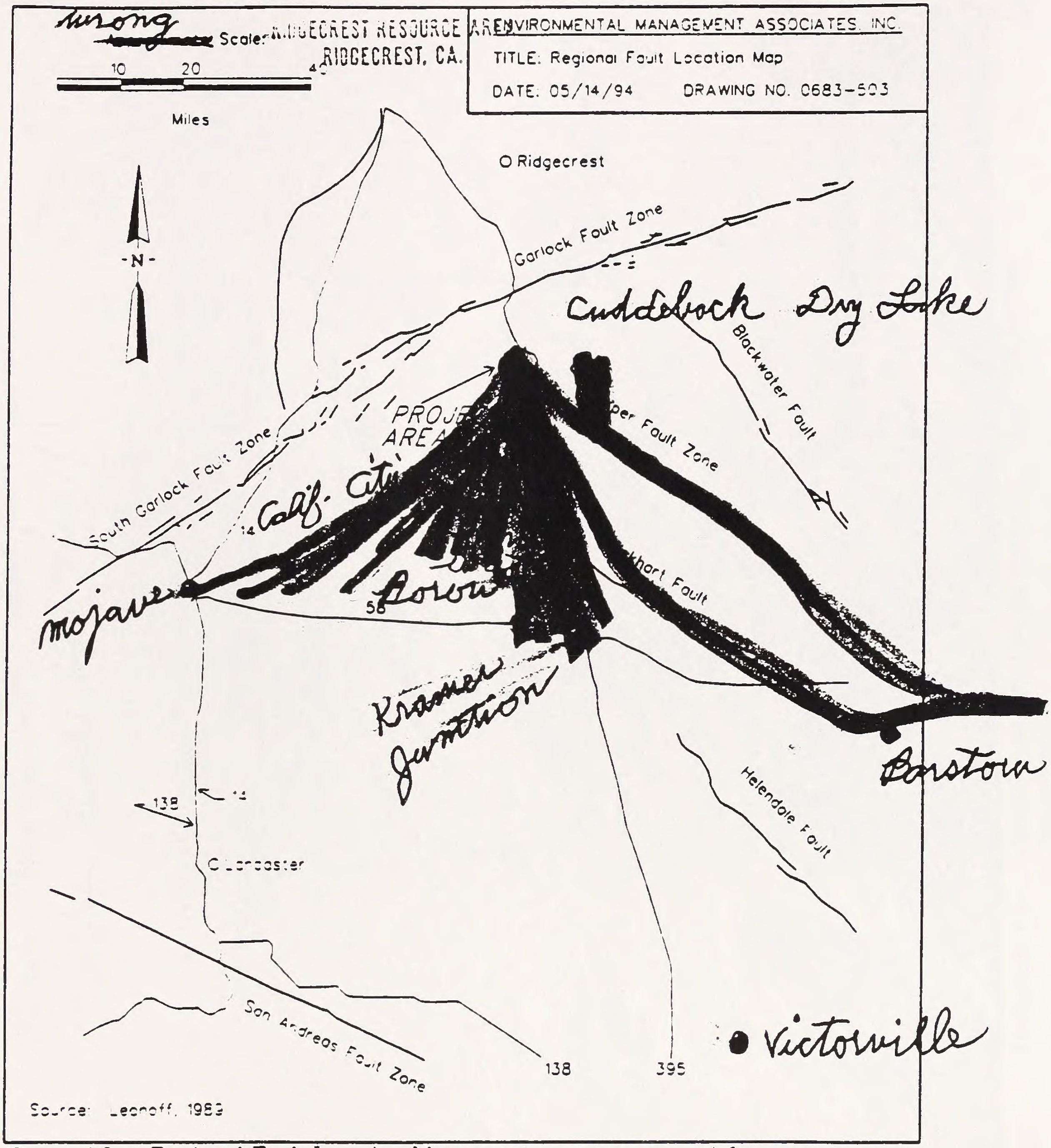


Figure 4-3: Regional Fault Location Map

mojave river

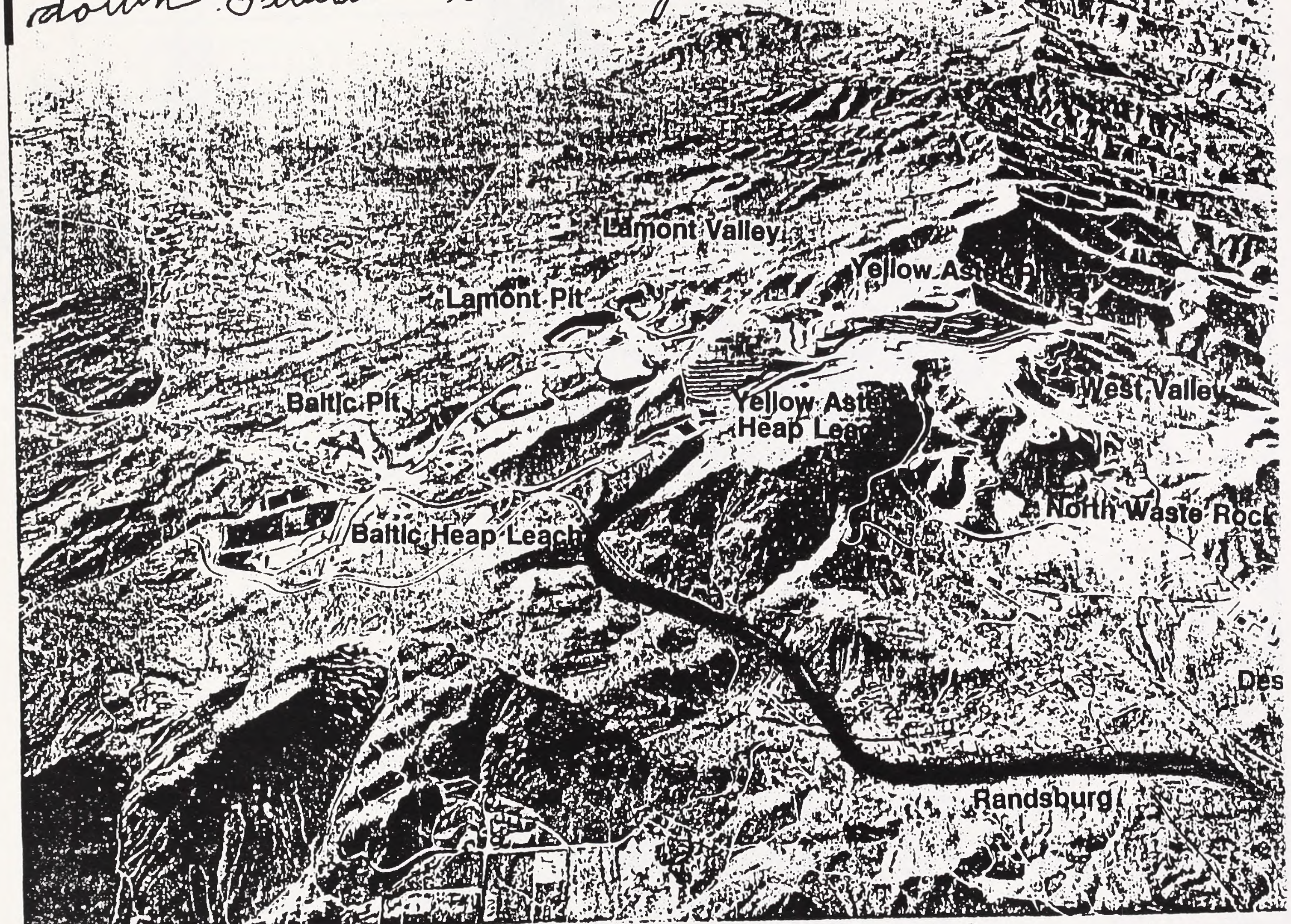
Comment
Document
No. 7

Dusty Hill
Box 305
Boron, Ca.
93516

VAN NUYS ... 3A
PM
1? ... V
1994

Curt Gunn
B L M
300 S. Richmond
Ridgecrest, Ca.
93555

7-1 Cart; Rand Mining Co. dumps water down Fiddler Gulch big time!



Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations.

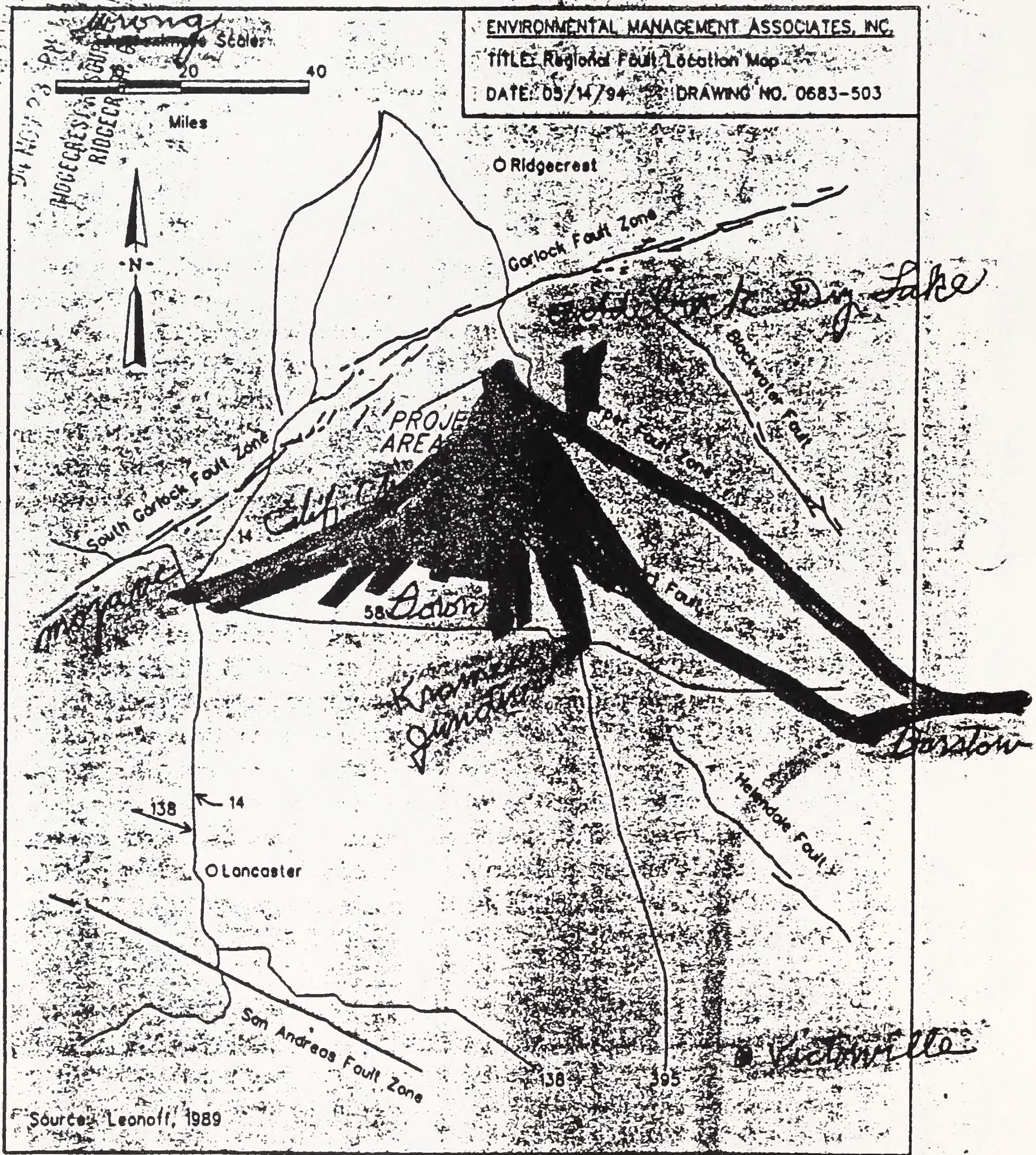


Figure 4-3: Regional Fault Location Map

Mojave river

JAN 12 1995

Comment
Document
No. 8

8-1 Dave: [redacted]

5,560 acre feet of water.

They will transfer Fremont valley water to Cuddeback wet lake, The water skiers won't have Athletics feet!

Dusty Hill
Box 305
Boron, Ca.
93516

VAN NUYS CA 914
PM
12 NOV
1994

Dave Taylor
B L M
300 S Richmond
~~Ridgecrest~~, Ca.
93555

Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations

RECEIVED

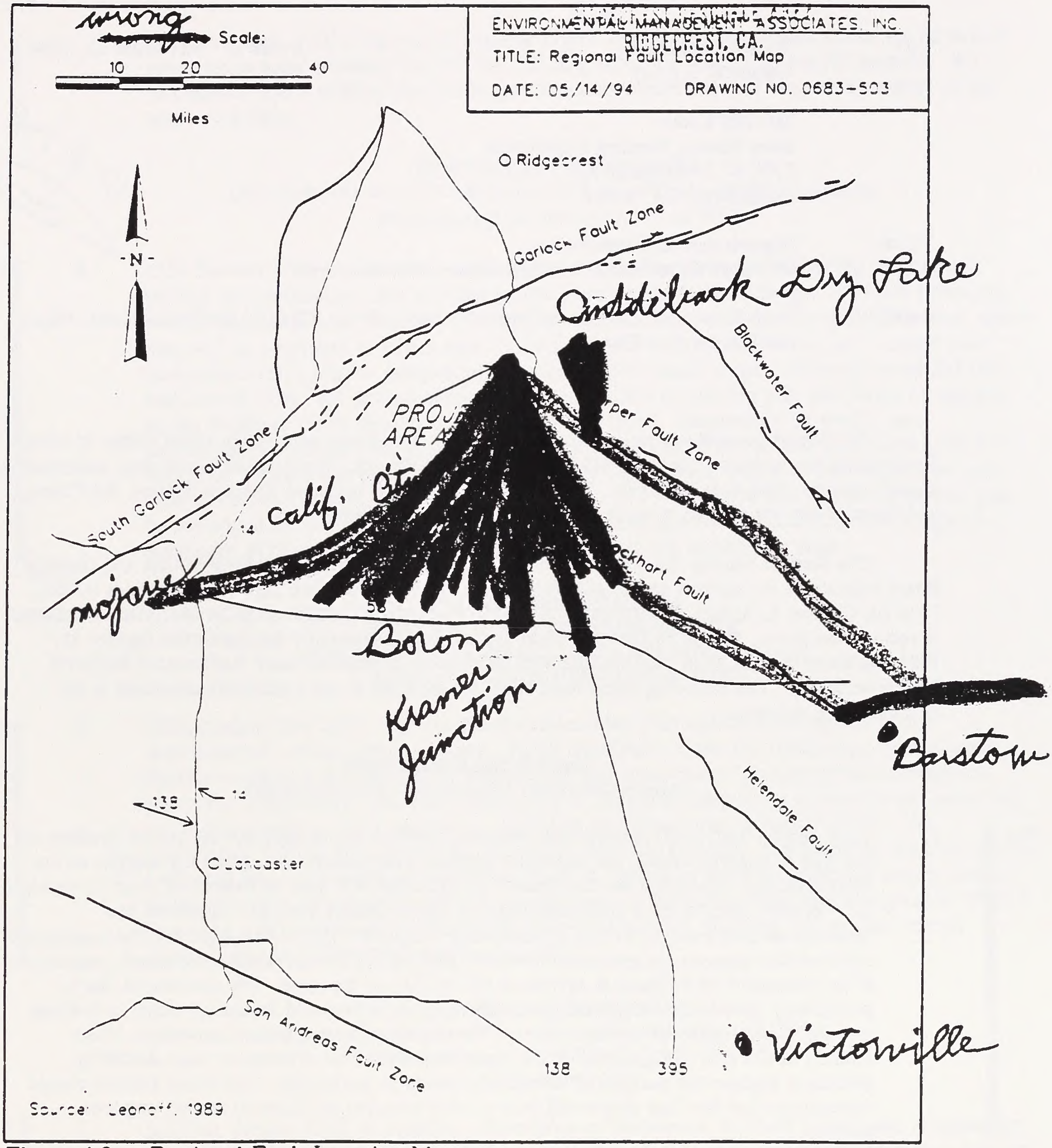


Figure 4-3: Regional Fault Location Map

mojave river

93042054

State of California

THE RESOURCES AGENCY

Comment
Document
No. 9

MEMORANDUM

To: Project Coordinator
Resources Agency

Mr. Bill Larsen
Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, CA 93301

Date: November 23, 1994

12-8-94

From: **Department of Conservation**
Office of Governmental and Environmental Relations

Subject: Draft Environmental Impact Report/Statement (Draft EIR/EIS) for Rand Project, Mining and Reclamation Plan

The Mined-Land Reclamation Project staff of the Department of Conservation's Office of Mine Reclamation has reviewed the Draft EIS/EIR for the Rand Project. Previous comments were submitted in a memorandum dated June 22, 1993. The following comments, prepared by James Pompy, Kit Custis, and Karen Wiese are offered to assist in your review of this project.

The Surface Mining and Reclamation Act of 1975 (SMARA) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR), Title 14, Chapter 8, Article 1, Sections 3500 et seq.) require that specific items be addressed or included in reclamation plans. For all reclamation plans approved or substantially amended after January 15, 1993, reclamation shall be in conformance with the recently enacted Article 9 Reclamation Standards (copies enclosed). The following items were either not included or not sufficiently addressed in the documents we reviewed.

Geotechnical Requirements

(Refer to CCR Sections 3502(b)(3),(b)(4), 3704 (a),(b),(d),(f))

9-1 1. CCR Section 3502(b)(3) requires that whenever the final slopes approach the critical gradient for the type of material mined, the regulatory agencies shall require an engineering analysis of the slope stability. The proposed final quarry configuration will have an overall slope of 1 horizontal to 1 vertical (1H:1V) for a maximum height of approximately 800 feet. However, the intermediate bench slopes will be approximately 1/2H:1V. The overall angle and the intermediate angle of final slopes may approach the critical gradient for the materials being mined, particularly if the orientation of fractures is adverse to the stability of the slope. We recommend that a preliminary geotechnical engineering stability analysis be prepared for the pit slopes to evaluate the long-term stability of the final slopes. We also recommend periodic inspections of the stability of the quarry highwalls. If the quarry highwall show evidence of mass instability, additional engineering analysis of the stability should be performed. The initial analysis should demonstrate that the final slopes will have a factor of safety sufficient to ensure long term stability.

9-2 The reclamation plan indicates that the final waste rock fill slopes will be approximately 350 feet high. Figure 2-14 of the reclamation plan indicates that the final slopes for the waste rock stockpiles will have an overall slope of 2H:1V with bench slopes of approximately 1/2H:1V

(±60 degrees). While the overall angle of 2H:1V is generally considered stable, the 60 degree bench slope angle probably exceeds the critical gradient for loosely placed fill material. We recommend that a stability analysis be performed to demonstrate the long-term stability of the waste rock fills.

Hydrology and Water Quality

(Refer to SMARA Sections 2772(h)(1),(h)(2), 2773(a), CCR Sections 3503(a)(3),(b)(1),(d), 3706(c),(d),(e),(f),(g), 3710 (b),(c), 3711(e), 3712)

9-3 2. CCR Section 3706 requires that erosion and sedimentation be controlled during all phases of mining and reclamation, and provides performance standards for drainage, diversion structures, waterways, and erosion control. The EIS/EIR indicates that an erosion and sedimentation control plan will be developed at a later date. Erosion control is a significant element of mined land reclamation and a plan to mitigate and monitor erosion should be part of the approved SMARA reclamation plan. An erosion control and sedimentation monitoring plan will likely be required by the Regional Water Quality Control Board (RWQCB). Information on erosion and sedimentation control, maintenance, and monitoring contained in RWQCB documents such as the Report of Waste Discharge, NPDES permit or the Storm Water Pollution Prevention Plan may meet the erosion control requirements of SMARA. We recommend that an erosion control plan be developed for the SMARA reclamation plan and that applicable monitoring and mitigation provisions of the RWQCB permits be incorporated into the reclamation plan.

Environmental Setting and Protection of Fish and Wildlife Habitat

(Refer to CCR Sections 3502(b)(1), 3503(c), 3703 (a),(b),(c), 3704(g), 3705(a), 3706(a),(f),(g), 3710(a),(b),(c),(d), 3713(b))

9-4 3. CCR Section 3502 (b)(1) requires that the reclamation plan include a description of the environmental setting of the mine site. A full description of the site is necessary to document baseline conditions that will aid in development and evaluation of an appropriate revegetation plan. The DEIS/DEIR provided a description of the biotic components of the site and states that "an initial sampling of the vegetation...would be performed prior to construction." We recommend that this information be included in the Final EIS\EIR. For example, the DEIS\DEIR states that when the results of monitoring show 21 percent or more of vegetation density and 15 percent or more of vegetation diversity as compared to initial sampling, then revegetation effort is successful. Without baseline information gained from initial sampling, the success criteria established in the DEIS\DEIR have no validity.

Resoiling and Revegetation

(Refer to SMARA Section 2773(a), CCR Sections 3503(a)(1),(f),(g), 3704(c), 3705(a),(b),(c),(d),(e),(f),(g),(h),(i),(j),(k),(l),(m), 3707(b),(d), 3711(a),(b),(c),(d),(e))

9-5 4. SMARA Section 2772 (h) requires a description of the manner in which reclamation adequate for the proposed use or potential uses will be accomplished. The reclamation plan states that "the pits would be reclaimed under the Level One guideline..." The "Level One" guideline is defined as "no reclamation activity other than to protect the public, livestock, and range wildlife." Since the pits constitute a significant area, we recommend that the level of reclamation be increased to "Level Two" which will reclaim the site to be more compatible with the proposed end uses.

Unless otherwise shown by test plots, it is apparent that a "Level One" reclamation activity could result in erosion, slope instability, loss of topsoil, and no habitat value for wildlife.

9-6 5. SMARA Section 2773 (a) requires that the reclamation plan establish "site-specific criteria for evaluating compliance with the approved reclamation plan, including topography, revegetation, and sediment and erosion control." We commend the applicant's intent to establish success criteria and recommend that the specific success standards be included in the EIS/EIR as previously referenced in comment 3 of this correspondence.

9-7 6. CCR Section 3705(b) requires test plots to be conducted simultaneously with mining to determine the most appropriate planting procedures. We applaud the applicant's intent to establish test plots and recommend that the details of these test plots be included in the EIS/EIR. For example, the reclamation plan states that Rand would transplant all Golden cholla and Beavertail. We recommend transplantation criteria for the golden cholla and beavertail cactus be included in the reclamation plan.

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact James Pompy, Manager, Reclamation Unit at (916) 323-8565.

Jason Marshall
Environmental Analyst

Enclosure

cc: James S. Pompy, Manager
Office of Mine Reclamation, Reclamation Unit

Dusty Hill
Box 305
Boron, Ca.
93516

MOJAVE, CA 935
PM
2 DEC
1994

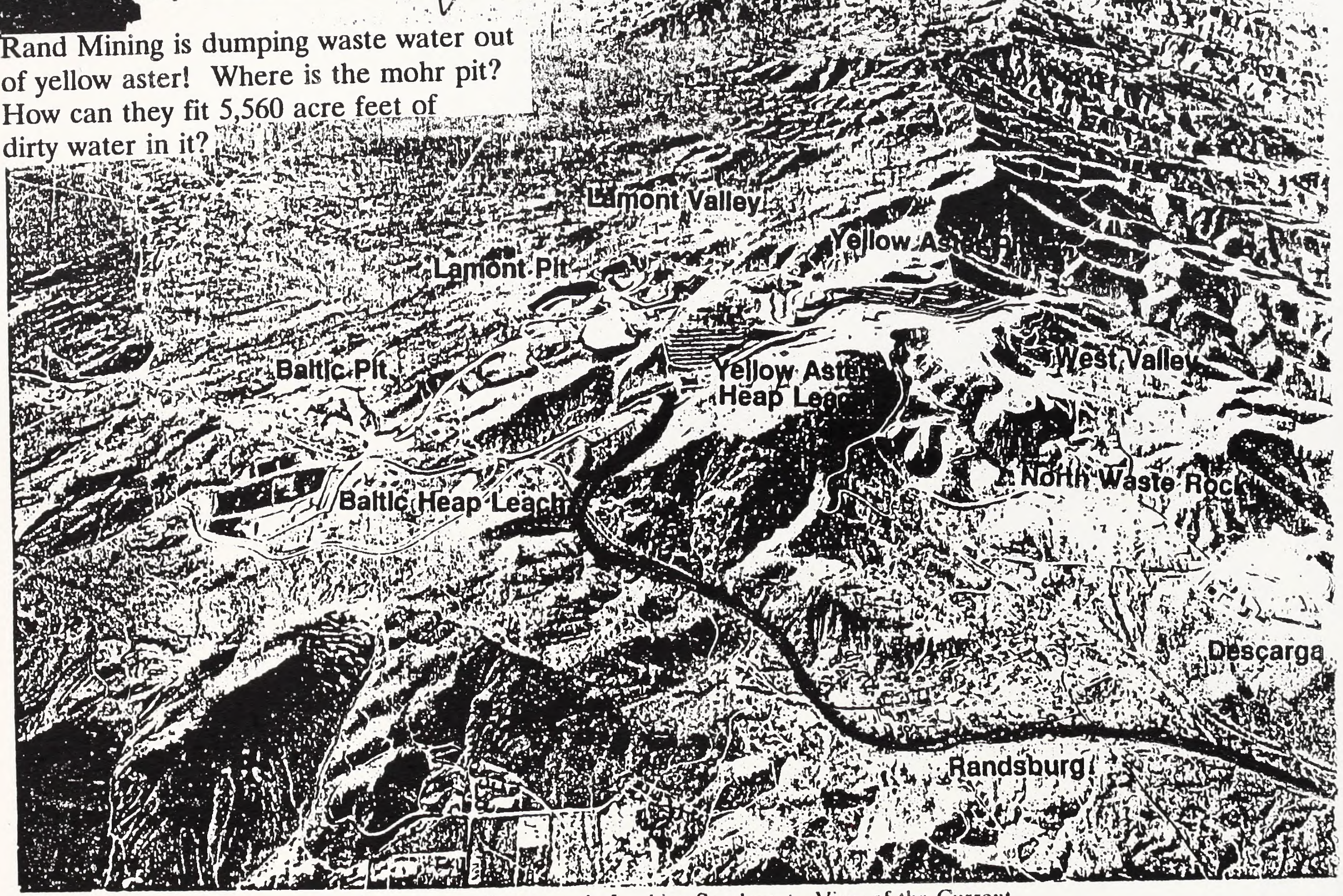
Comment
Document
No. 10

Bob Parker
BLM
300 S. Richmond
Ridgecrest, Ca.
93555

RECEIVED
BUREAU OF LAND MANAGEMENT
94 DEC -5 PM 1:32
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

[redacted]

10-1 Rand Mining is dumping waste water out of yellow aster! Where is the mohr pit? How can they fit 5,560 acre feet of dirty water in it?



Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations

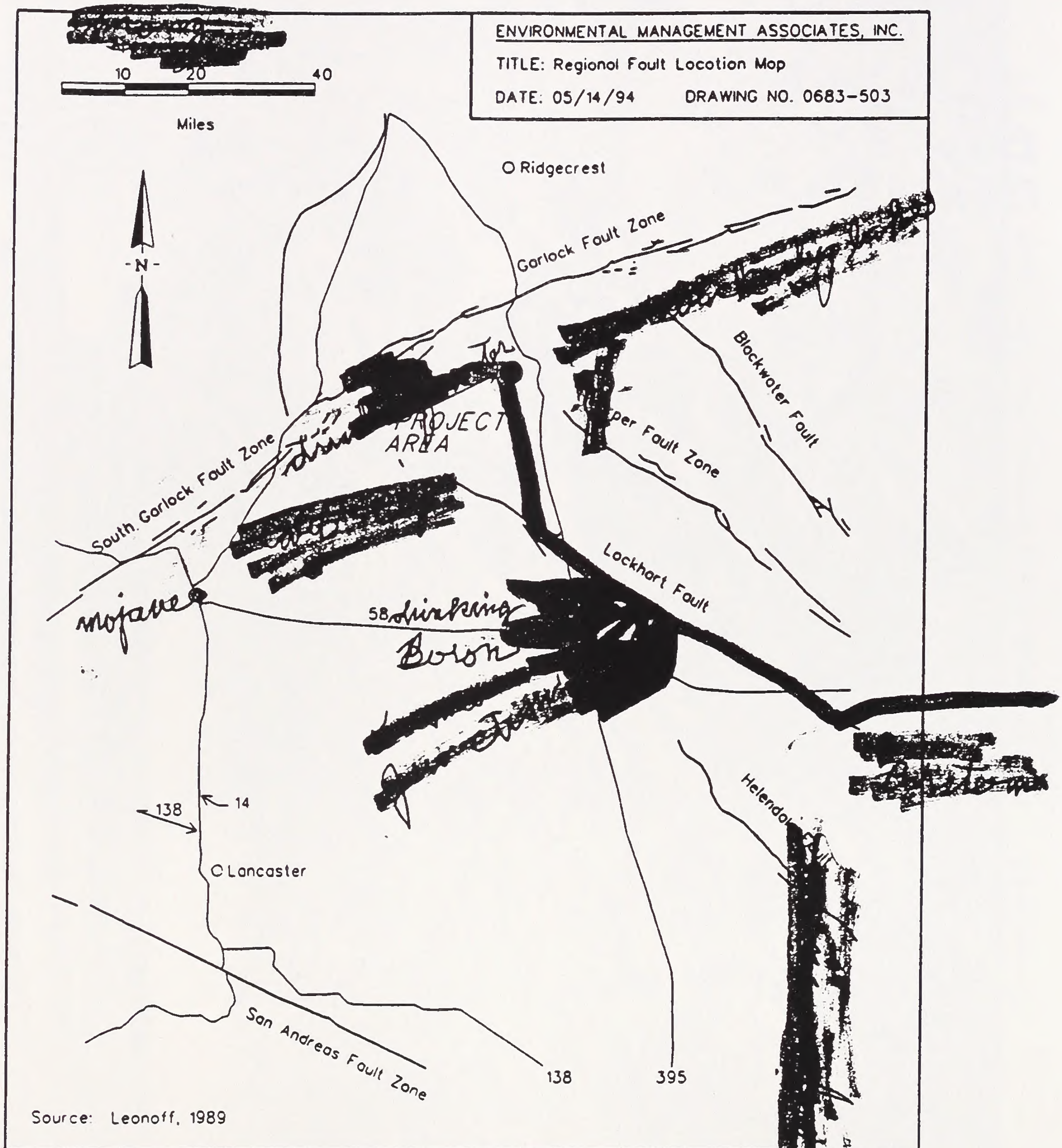


Figure 4-3: Regional Fault Location Map

RECEIVED
BUREAU OF LAND MANAGEMENT
94 DEC -5 PM 1:31
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

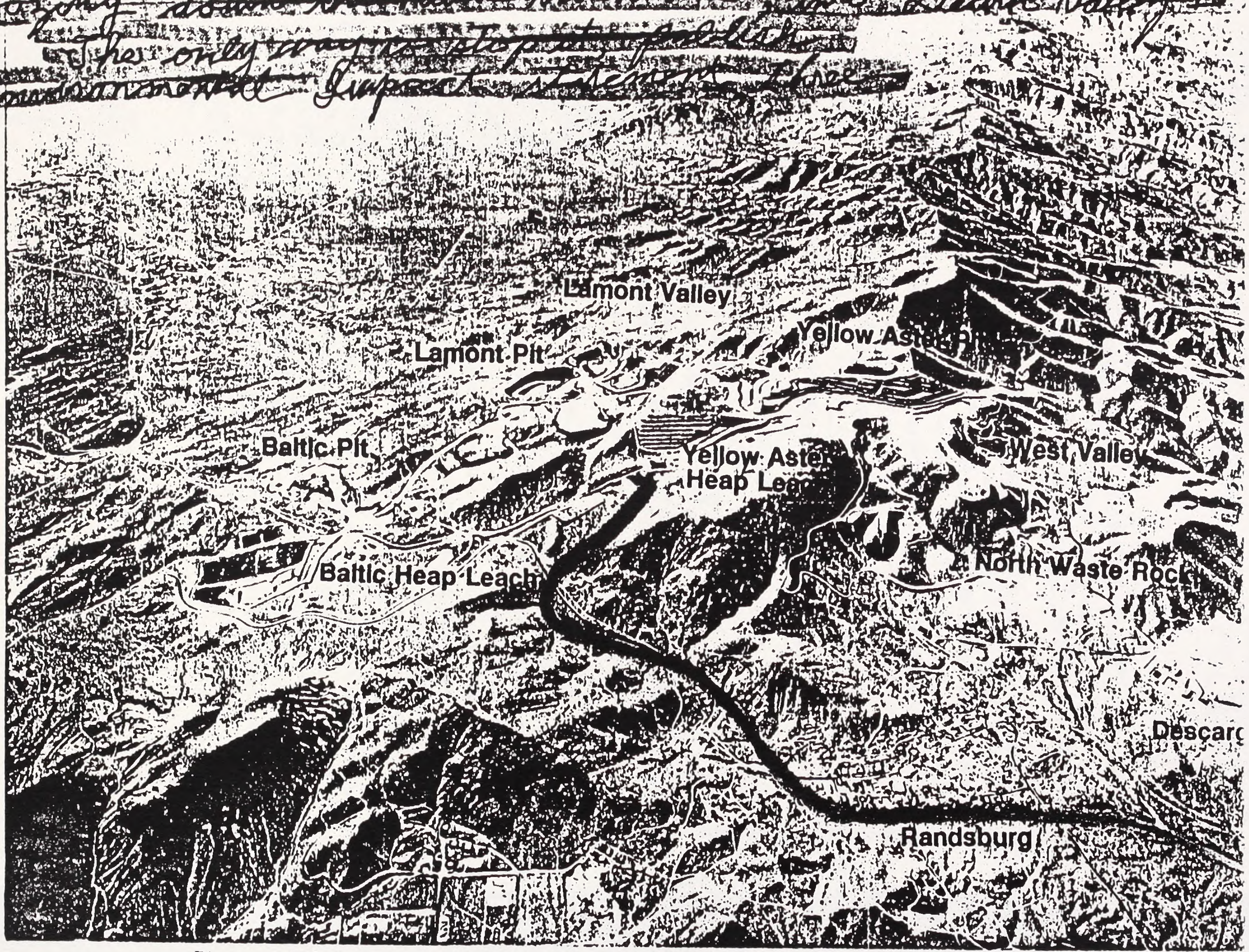
Comment
Document
No. 11

Dusty Hill
Box 305
Boron, Ca.
93516

MOJAVE, CA 935
PM
2 DEC
1994

Buzz Todd
BLM
300 S Richmond
Ridgecrest, Ca.
93555

11-1 Buzz: There is a huge slug of Rand mining slime oozing down the Rand mountains into Death valley II. The only way to stop the [illegible] Environmental Impact statement [illegible]



Photograph J-4: Aerial Photograph, Looking Southwest. View of the Current Operations.

John R. Swanson
3400 Edmund Blvd.
Minneapolis, MN 55406

Comment Document No. 12

December 2, 1994.

Bureau of Land Management
300 S. Richmond
Ridgecrest, CA 93555

Dear Sirs,

Please accept my following comments concerning the Rand Gold Mine Expansion DEIS/DEIR.

12-1 I wish to advise that such proposed expansion of the Rand Gold Mine will cause serious water and air pollution problems. As well as damage wildlife, vegetation, and visual resources.

With the purpose of the Bureau of Land Management to promote biological diversity, ecosystems conservation, wilderness preservation, stream preservation, and wildlife, fish, and plant species preservation.

So as to fully benefit Man, and all life!

Sincerely,
John R. Swanson.

RECEIVED
BUREAU OF LAND MANAGEMENT
94 DEC -6 PM 1:44
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Comment Document No. 13

SIERRA CLUB

California/Nevada RCC Mining Committee
P.O. Drawer W, Independence, CA 93526
Stan Haye, Chair. (619) 878-2244

RECEIVED
BUREAU OF LAND MANAGEMENT
94 DEC 19 PM 2:23
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Dear Sir:

The following comments are submitted in regards to the Draft Environmental Impact Statement/Report (DEIS/R) for the Rand Project, Rand Mining Company (RMC), Kern County, California.

13-1 Page 2-51, Sec. 2.3.7.3. -- Revegetation Activities. This section does not take note of the comments of the Division of Mines and Geology (DMG) dated June 22, 1993. Among other things, these comments state that the best survival rate for transplanting Joshua trees is to move those from four feet to ten feet, not those less than four feet, as stated in the DEIS/R. As recommended by DMG, test plots should be established to test the feasibility of the proposed revegetation methods before costly mistakes are made, and the plan should be revised to address the transplantation criteria for Joshua trees. Monitoring should occur annually until the revegetation criteria are met.

13-2 Page 2-59, Sec. 2.3.7.4 -- Facilities Closure/Dismantling. The benches are too even. Any benches remaining at closure should not be level or straight, and should vary in width, and generally be as irregular as possible. However, there should be no benches in the final configuration of the heap leach and waste rock piles, but they should be graded to a slope that is acceptable without them and present a rounded hill appearance. To the maximum extent possible, already disturbed areas should be used to enlarge the heap leach and waste rock piles, if necessary.

13-3a Page 3-2, Sec. 3.2 and Page 5-2, Sec. 5.1.2 -- BLM Preferred Alternative/ Proposed Action. While the broad objectives of offsite mitigation are laudable, there is not enough information presented here for the decision makers or the public to determine whether or not the Preferred Alternative with offsite mitigation or another alternative is superior. It seems to us that this provision, as used here and in the Briggs DEIS/R, is a fudge factor thrown in to make an otherwise deficient alternative sufficient into a Preferred Alternative. Specific offsite mitigation sites and projects must be identified, and their environmental impacts must be evaluated, before a Preferred Alternative can be identified. For instance, money from this project should not be used to reclaim sites where there are other financially responsible parties who should be doing the work. RMC's offsite mitigation should only occur on truly abandoned sites. This section also states that the land reclamation could be in the "surrounding area". Exactly how far away from the Rands could the surrounding area be? Is the offsite mitigation requirement binding on RMC's successors?

To explore, enjoy, and protect the wild places of the earth. . .

13-3b We also strongly believe that the discussion of the backfilling alternatives is deficient, in that a thoroughly substantiated, detailed cost estimate for backfilling is not included. See also comments on Page 3-14.

As we strongly believe that this DEIS/R does not present enough information for an informed decision to be made as to whether the Preferred Alternative or another alternative is superior, we ask that it be withdrawn and rewritten to include information on the specific projects to be included in the offsite mitigation, along with their environmental impacts, and detailed information regarding the backfilling alternatives, with an appropriate public comment period, or that a Supplemental DEIS/R be issued with this information, with the appropriate public comment period.

13-4 Page 3-5, Sec. 3.3.1.3 -- Water Source Locations. As mitigation for the increased water use by this project, we believe that the alternative of RMC acquiring other private land now used for agricultural production in the same water basin should be explored. Discontinuing the use of water for agriculture would offset the use of water by RMC, and the land could be restored to a natural state as mitigation for damage to tortoise habitat. Buying land and retiring it from agricultural production is a mitigation now required at a large mine in Nevada, and buying land for tortoise mitigation is now required at the Viceroy Mine in California.

13-5 Page 3-14, Sec. 3.3.3.2 -- Project Constraints on Backfilling. We believe that at least partial backfilling would be a preferred alternative to the Proposed Action. We would also like more information on the economic constraints on backfilling. In making the backfilling cost estimate, costs from recognized engineering handbooks, properly documented, should be used. Please supply the full reference for NRC, 1979, cited on Page 3-14. Please supply details which substantiate the amount of $0.80 per ton, and the full reference for USDI, 1990a. If these publications are referenced in the EIS/R, copies should be available in the Ridgecrest Resource Area office for the public to read. Which other open pit gold mine in California is mentioned as a comparison to this project, and why is not specific information from this other mine not referenced in this DEIS/R? What is the analysis which indicates that the project would have a negative net present value when the cost of backfilling was included (USDI, 1990a)? What assumptions were used in this analysis, including the price of gold, the discount rate, etc? At least some of this information is not proprietary, and should be included in this DEIS/R, or specific reasons given as to why it is not.

13-6 Page 4-11, Sec. 4.4.2, Page 4-12, Fig. 4-5, Page 5-6, Sec. 5.1.4.2 and Page 5-7, Fig. 5-1 -- Groundwater. The figure does not include the location of the Garlock Fault. Is the fault on the edge of the basin as defined for groundwater modeling? If not, does the fault run somewhere through the basin? If this is true, how can the contour of equal water level be such nice curves? Would not the fault offset the sediments, thereby causing different water levels on either side of the fault? Lack of this information causes serious doubts as to the accuracy of the groundwater modeling. If the model has not taken the fault into account, then either an explanation of why the fault does not affect the model, or a groundwater model that does take it into account, must be done.

13-7a Page 4-36, Sec. 4.9 and Page 5.20, Sec. 5.1.9 -- Visual Resources. In Photo J-2, the two light colored areas should be stained darker, or covered with dark rock. In Photo J-3, the end of the hill is too light, and should either be stained dark or

13-7b covered. The vertical lines on the rock piles are too even and prominent -- they should be made more uneven. Some parts of the DEIS/R seem to indicate that the waste rock and heap leach piles will be recontoured, and other parts seem to indicate that benches will be left -- which is true? As we have stated elsewhere, we believe that there should be no benches left after final reclamation, except possibly in the pits. We believe that leaving benches is unnecessary and undue degradation and is not economically necessary.

13-7c To ensure that the final landscape is as good as possible, a *qualified* landscape architect (member AIA) should not only have final approval of the final project design, but also a *qualified* landscape architect should be on site at all times to supervise the construction of the heap leach and waste rock slopes and pit benches, placement of landscape elements such as rocks and plants, and all other elements of the final landscape design. This is a reasonable requirement to protect the public land and to ensure SMARA compliance without unreasonably increasing project costs.

13-8 Page 4-45, Sec. 4.11.2 -- Road System. Safe, convenient, and well marked access from Randsburg to the Rands and Government Peak should be ensured, both for the benefit of recreation users in the Rands and the maintenance of the facilities on Government Peak.

13-9 Page 4-49, Sec. 4.12 -- Socioeconomics. This section should discuss the economic benefits of backfilling, such as more and longer lasting jobs, more and longer lasting tax revenue to the County, and the ripple effects of these.

13-10a Page 5-10, Sec. 5.1.5 -- Air Quality. The comments of residents living near the project to not seem to have been sufficiently addressed in this section. Approval of this project should be conditional on reducing, or at least not increasing, PM 10
13-10b dust and chemical, including cyanide, emissions. A Compliance Officer on site at all times would also help to ensure compliance with air quality requirements -- see below.

13-11 Page 5-18, Sec. 5.1.7 -- Wildlife Resources. The statement is made that "The proposed use of netting over the process water Ponds would limit impacts to any migratory or non-migratory birds." It should be noted here that the Migratory Bird Treaty Act makes *no* provision for the killing of migratory birds without a permit. Does RMC have such a permit?

We also believe that floating covers over the ponds, instead of netting, may be a better method of preventing bird and other animal deaths, as well as having the side benefit of conserving water. These are proposed to be used on the Briggs project -- why not here?

13-12 Page 6-2, Sec. 6.4.2 -- Groundwater. A mitigation measure that should be added is to require reduced pumping by RMC, or a complete shutdown of pumping, if the downdraw from RMC pumping exceeds the groundwater modeling predictions, either in quality or in quantity. This should not be a problem, if the groundwater modeling is as good as it is supposed to be.

13-13 Page 6-3, Sec. 6.6.1 -- Vegetation Communities. All Joshuas that can be salvaged at all should be salvaged *to be reused on site*. None should be allowed to be taken off site, nor should any other plant material.

Seeds for revegetation should be gathered in the local area. These plants are the ones best adapted to this specific site.

13-14 Page 6-3, Sec. 6.7, F-5 -- Wildlife resources. *We do not trust self reporting by this or any other company*. After all, if the Internal Revenue Service does not trust us, why should we trust RMC? In business, the best rule is to trust only what you can see, what you can have independently verified, and what you have in writing.

Therefore, we believe that periodic inspection, mostly at unspecified intervals, with advance notice, by the various separate agencies, is insufficient to ensure compliance with the terms and conditions of this EIS/R and the Plan of Operations. Too much is left to RMC. We ask that a Compliance Officer, a BLM Government employee paid for by RMC, be on site at all times. This person should have very extensive experience in mining and heavy construction. Having such an inspector on site at all times, continuously making unannounced inspections, would, for instance, protect against improper construction of the heap leach pads, as happened at Summitville, or non-reporting of migratory bird deaths, as has happened at various mines in Nevada. We have also heard what we believe are reliable reports of unreported bird deaths at this mine. We believe that a Compliance Officer answerable only to the public on site at all times is the minimum requirement necessary to adequately protect the public's interest in its land and resources.

13-15 Page 6-6, Sec. 6.9 -- Visual Resources. This mitigation measure is laughable. In addition to the requirements for the lights, there must be specific mitigation measures regarding regrading of the heap leach and waste rock piles into rounded, irregular forms and the pits into irregularly benched configurations, with the proper colors and textures, so that they blend with the natural landforms in the area. A landscape architect should design the final mine configuration and be on site during construction to oversee the placement of landscape elements. See comments under Page 4-36.

13-16 Also, to ensure adequate public involvement in this project, and to ensure that the public is fully informed, the following should be required:

a. Regularly-scheduled tours of the facility, with all members of the public invited to participate, should be required to be conducted at least every six months, to observe whether or not the Plan of Operation and reclamation requirements are being met.

b. A final public tour of the facility after all reclamation is complete, but before the bond is released, should be required to be conducted so that the public can observe whether or not all of the reclamation requirements have been met.

c. A properly noticed public hearing should be required to be held, after all reclamation is complete, but before the bond is released, on whether or not the public believes that reclamation has been completed as per the reclamation requirements. The decision as to whether or not to release the bond is an important public decision, and should be open to public participation.

d. A requirement should be included that all records pertaining to reclamation and mitigation monitering be open to inspection by the public during regular business hours, and available for the cost of copying.

13-17 Page 9-15, Sec. 9.5 -- Summary of Existing, Proposed and Reasonably Foreseeable Future Operations. These future projects, added to the considerable damage done to the area by previous mining operations, makes the proper reclamation and mitigation of the impacts of the Rand project even more important, as the total damage in the area caused by mining is considerable and could be much more.

Respectfully submitted,

Stan Haye

Stan Haye, Chair

State of California

The Resources Agency

Comment
Document
No. 14

Memorandum

Date : DEC 5 1994

12-8-94

To : 1. Project Coordinator
Resources Agency

2. Mr. Bill Larsen
Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, California 93301

From : Department of Water Resources

Subject: SCH #93042054
Draft Environmental Impact State/Environmental Impact Report
Rand Project
Kern County

We have completed the review of the Draft Environmental Impact Statement/Environmental Impact Report, dated October 1994, for the Rand Project.

14-1 Based on the information provided, we could not determine if any of the proposed ponds identified in the Draft Environmental Impact Statement/Environmental Impact Report, Volume I, are under the jurisdiction of the Division of Safety of Dams. Pursuant to Part 1 of Division 3 of the California Water Code, dams 25 feet or higher having a reservoir storage capacity of more than 15 acre-feet and dams higher than 6 feet having a capacity of 50 acre-feet or more would fall under our jurisdiction. If any of the proposed ponds are jurisdictional, a construction application must be filed and all dam safety related issues resolved prior to approval of the application.

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement/Environmental Impact Report.

If you have any questions, please contact Area Engineer Mark D. Meeks at (916) 323-1116 or Regional Engineer Richard Sanchez at (916) 322-6206.

Vernon H. Persson

Vernon H. Persson, Chief
Division of Safety of Dams

MEMORANDUM OF CALL

Previous editions usable

TO: ~~Lee~~ Buzz

[x] YOU WERE CALLED BY— [ ] YOU WERE VISITED BY—

Mrs. Corie

OF (Organization)

Randsburg

[ ] PLEASE PHONE ▶ [ ] FTS [ ] AUTOVON

374-2429

[ ] WILL CALL AGAIN [ ] IS WAITING TO SEE YOU

[ ] RETURNED YOUR CALL [ ] WISHES AN APPOINTMENT

MESSAGE

15-1 cannot attend meeting tonight but would like you to know she is very much against mines taking so much of the water.

RECEIVED BY	DATE	TIME
	12-7	2:15

63-110 NSN 7540-00-634-4018 STANDARD FORM 63 (Rev. 8-81) Prescribed by GSA FPMR (41 CFR) 101–11.6

☆ U.S.G.P.O. 1994 300-891/80022

The following text paraphrases the comments received during the public hearing held on Wednesday December 7, 1994 at the Johannesburg Hall, Johannesburg, California.

Comment Document No. 16

COMMENT NO.	COMMENTOR	COMMENT
16-1	Mr. Derrickson:	What about reclamation? What guarantees are there that it will actually take place? They won't be making any money at that time.
16-2	Mr. Cassel:	I've seen what happened in Colorado where mining companies were supposed to have done the reclamation work, and none of it is done. A bond of $3,000 an acre is barely a drop in the bucket for the billions that they're going to be spending in Colorado to correct the problems they have at this Super-Fund site.
16-3	Mr. Patterson:	Rand did not address the environmental issues of the birds, animals, air pollution, dust pollution, and light pollution. What's being done about that? I was told it would be reflected in this documentation.
16-4	Mr. Ferguson:	Is there anyone living in the project area? I believe someone is living right on the boundary behind the Sunshine Mine.
16-5a	Mr. Moad:	I live on the other side of the Baltic expansion. I think I am living only 1,200 feet from the edge of the pit. Their fence doesn't stop the dust from going across. It seems to me if they have some kind of air pollution control or monitoring station, it ought to be put right by my yard.
16-5b	Mr. Moad:	All the run-off from their new road near the Baltic pit goes into a wash behind my house.
16-6	Mr. Dunbar:	The wind goes across where I live. During the summer, alot of dust and lime blows over the top of the hill.
16-7	Mr. Cassel:	There's some tailings up here in the Descarga area. This is creating the biggest problem for the town of Randsburg.

COMMENT NO.	COMMENTOR	COMMENT
16-8	Mr. Cassel:	If the Descarga Mine site is operated, what are the chances of a hazardous material spill affecting my residence?
16-9	Mr. Thornton:	Overdrafting will cause a fall in water levels, which is indicated as a possibility within the document. We believe that a fall is going to be more significant than indicated. In addition to that, it will cause poor water quality from underneath the Koehn Lake area to migrate toward the Rand Community Water District wells.
16-10	Mr. Thornton:	We think that the alternative water supplies for the project were inadequately analyzed, they should be analyzed, developed and evaluated to the same level as Rand's proposed source of water.
16-11	Mr. Patterson:	Has the BLM verified the correct location of the fault lines as they've been enhanced into the pictures and drafts of the Environmental Impact Statement?
16-12	Ms. Thompson:	Rand has a bond for reclamation, but what if it's found that our water is gone and that the dust harms our health? Is there a bond to take care of that?
16-13	Mr. Cassel:	The historic tailings from the original Descarga Mine are impacting air quality near my property from silica dust.
16-14	Mr. Cassel:	The Agencies tasked with protecting air quality are not thorough enough in their support for the local residents.
16-15	Mr. Cassel:	Anybody that lives in the Randsburg area can see that on a windy day there's tons of dust in the air. There are piles of silica and quartz up there that are 300 to 500 feet high. The wind just grabs it and just rips it right down through the town.

COMMENT NO.	COMMENTOR	COMMENT
16-16	Mr. Cassel:	Concerned that regulatory agencies are not effectively responding to complaints over air quality monitoring and dust emissions from the mine because of the jurisdictional boundary between San Bernadino County and Kern County divides them.
16-17	Mr. Cassel:	There's a tremendous mercury contamination and solvents contamination that's right on top of our aquifer. And there's nothing that the BLM does about it.
16-18	Mr. Irish:	Does the mercury contamination have anything to do with Rand Mining Company?
16-19	Mr. Cassel:	We've lost a tremendous amount of business in our town. We have people closing down antique shops and leaving.
16-20	Mr. Cassel:	We used to have somebody doing commercials and making movies up here every week in Randsburg. We've lost tourist business because of insults and vulgarities used against the tourists. The people are coming from the Rand Mine after work and creating problems for us.
16-21	Mr. Cassel:	Tourists don't come to town anymore because of drunk miners.
16-22	Mr. Cassel:	The information that I received is that they were going to do drug testing up at the mine, but they stopped.
16-23	Mr. Balfour:	My concern is if there is a spill, the percolation to our water quality.
16-24	Mr. Frost:	Why is there a difference in backfilling requirements between coal mining and gold mining?

COMMENT NO.	COMMENTOR	COMMENT
16-25	Mr. Frost:	I've got a feeling that the saline water is coming around to the Rand wells, because Rand is pulling enough. We want to check their water and see how much saline they are running.
16-26	Mr. Cassel:	We were here because of the fact that they put in for permits to take 1,000 gallons a minute out of our aquifer.

STATE OF CALIFORNIA PETE WILSON, *Governor*

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
SACRAMENTO, CA 95814

Comment
Document
No. 17

December 8, 1994

BILL LARSEN
KERN COUNTY PLANNING
2700 "M" STREET, SUITE 100
BAKERSFIELD, CA 93301

Subject: EA 23-92; CYANIDE HEAP LEACH MINING (RAND PROJECT) SCH #: 93042054

Dear BILL LARSEN:

17-1 The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation.

These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Kristen Derscheid at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Michael Chiriatti, Jr.
Chief, State Clearinghouse

Enclosures
cc: Resources Agency

Notice of Completion *Supplementary Document M*

Mail to: State Clearinghouse, 1400 Tenth Street Sacramento, CA 95814 916/445-0613

See Note Below

SCH # 93042054

Project Title: *EA 23-92; CUP 4, Map 116; CUP 8, Map 116-35; CUP 3, Map 138 (Rand Project)

Lead Agency: Kern County Planning Department | **Contact Person:** Bill Larsen

Street Address: 2700 M Street, Suite 100 | **Phone:** 805/861-2615

City: Bakersfield, CA **Zip:** 93301 | **County:** Kern

Project Location: County: Kern City/Nearest Community: *Randsburg

Cross Streets: *Randsburg Avenue Zip Code: * Total Acres: *1020

APN # *182-100-03 Section *34,35,1,2,3 Twp. *29S, 30S Range *40E Base *MDBM

Within 2 miles:

State Hwy # *395 Waterways *

Airports * Railways * Schools *

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH#) ________ ☐ Other ________

NEPA: ☐ NOI ☐ EA ☒ Draft EIS ☐ FONSI

☒ Joint Document ☐ Final Document ☐ Other ________

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan ☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan ☐ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, Parcel Map, etc.) ☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other ________

Development Type

☐ Residential: Units ____ Acres ____

☐ Office: Sq.Ft. ____ Acres ____

☐ Commercial: Sq.Ft. ____ Acres ____ Employees ____

☐ Industrial: Sq.Ft. ____ Acres ____ Employees ____

☐ Educational ________

☐ Recreational ________

☐ Water Facilities: Type ____ MGD ____

☐ Transportation: Type ____

☒ Mining: Mineral GOLD/SILVER

☐ Power: Type ____ Watts ____

☐ Waste Treatment: Type ____

☐ Hazardous Waste: Type ____

☐ Other ________

Project Issues Discussed in Document

☒ Aesthetic/Visual ☐ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☐ Coastal Zone ☒ Drainage/Absorption ☒ Economic/Jobs ☐ Fiscal

☒ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geologic/Seismic ☒ Minerals ☒ Noise ☐ Population/Housing Balance ☐ Public Services/Facilities ☐ Recreation/Parks

☐ Schools/Universities ☐ Septic Systems ☐ Sewer Capacity ☐ Soil Erosion/Compaction/Grading ☐ Solid Waste ☒ Toxic/Hazardous ☐ Traffic/Circulation ☐ Vegetation

☒ Water Quality ☒ Water Supply/Groundwater ☐ Wetland/Riparian ☒ Wildlife ☐ Growth Inducing ☒ Land Use ☐ Cumulative Effects ☐ Other ________

RECEIVED
OCT 24 1994
STATE CLEARING HOUSE

Present Land Use/Zoning/General Plan Use

*Mining/NR (20), A1/8.4 (Mineral Petroleum), 1.1 (Non Jurisdictional Lands)

Project Description

*Cyanide Heap Leach Mining- Conditional use permit (CUP) applications to allow the expansion of four existing mining operations: Yellow Aster Mine, Baltic Mine, Lamont Mine, and Descerge Area. The proposed Rand Project will also consist of associated exploration activities, implementation of wildlife impact reduction measures, conducting reclamation activities as found in the reclamation plan, construction & maintenance of roads, & upgrading of existing water well field & pipelines. Specific components of the project include expansion of the 3 existing open pits (Yellow Aster, Baltic, & Lamont); development of associated satellite deposits; development of 2 waste rock stockpiles; development of 2 cyanide heap leach pads with associated solution ditches and ponds; development of 2 mineral recovery plants; & other ancillary facilities.

CLEARINGHOUSE CONTACT: Michael Chiriatti
(916) 445-0613

STATE REVIEW BEGAN: 10-24-94

DEPT REV TO AGENCY: 12-1

AGENCY REV TO SCH : 12-6

SCH COMPLIANCE : 12-8

PLEASE NOTE SCH NUMBER ON ALL COMMENTS

PLEASE FORWARD LATE COMMENTS DIRECTLY TO THE LEAD AGENCY ONLY

AQMD/APCD: 1/ (Resources: 10/29)

CMT SNT

X Resources

[redacted]

X Conservation 4

X Fish & Game

[redacted]

[redacted]

X DWR

[redacted]

S CHP

X Caltrans # 9

[redacted]

S Health & Welfare

[redacted]

CMT SNT

State/Consumer Svcs

[redacted]

S ARB

S CA Waste Mgmt Bd

[redacted]

X Reg. WQCB # 6VIC

[redacted]

S Energy Comm

S NAHC

[redacted]

X State Lands Comm

Tahoe Rgl Plan

S Other: FOOD & AG

("S" = sent by lead / "*" = sent by SCH)

NBS/LOWRY

ENGINEERS & PLANNERS

17748 Skypark Circle
Suite 100
Irvine, California
92714-6468

714 261-7086 Tel
714 261-6132 Fax

RECEIVED
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Comment
Document
No. 18

188-015-005

December 15, 1994

U.S. Dept. of the Interior
Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond
Ridgecrest, CA 93555

Attention: Ahmed Mohsen

**SUBJECT: RAND PROJECT, RANDSBURG, KERN COUNTY, CALIFORNIA DRAFT EIS/EIR
EIS NO. CA065-NEPA 94-04
STATE CLEARINGHOUSE NO. 93042054**

Dear Mr. Mohsen:

NBS/Lowry has been retained by the Rand Communities Water District (RCWD) to review and comment on the subject project. We appreciate the opportunity to review the two volumes of the Rand Mining Company (RMC) draft Rand Project EIS/EIR. We have reviewed and commented on the entire document with focused comments regarding the water resources impacted by the project.

Our primary concern is the extensive overdraft of the northeastern Fremont groundwater basin. RCWD operates two deep wells approximately one and one-half miles from RMC's No. 4 well. Historically, the Fremont Valley has been tremendously overpumped. Studies performed by the USGS and California Department of Water Resources indicated that in 1960 over 18,500 acre-feet per year was extracted and in 1976, 60,000 acre-feet per year was extracted from the valley. Recharge averages approximately 10,000 acre-feet per year, significantly less than extractions. Much of the overextraction took place to the southwest of Koehn Lake, creating a deep pumping depression and a steep hydraulic gradient to the northeast. Water levels have continued to fall at the RCWD wells at the rate of 3 to 5 feet per year.

Initial studies by NBS/Lowry indicate that the northeast portion of the Fremont Valley continues to be seriously overdrafted. This condition will be aggravated by **any** additional pumping and endanger the only potable water supply of RCWD, endangering the **health and safety** of the people served by the District. The cumulative effect including historic and increased pumping must be evaluated and mitigated before any additional projects requiring pumped groundwater

RAND\16417005.RPT

from the northeast portion of the Fremont Valley are approved by Kern County or the Bureau of Land Management (BLM).

The issue of overdraft and export of groundwater from the northeast Fremont Valley was brought to the attention of Kern County and the BLM during the EIS/EIR scoping and the December 7, 1994 public hearing. **No public agency has taken responsibility for regulating the overdraft.** We believe that this continued overpumping is currently affecting water quality at the RCWD wells and has the potential of impacting the State Water Resources Control Board's groundwater beneficial use as a potable water supply. We recommend that RMC go to other alternatives for their water supply. **At the current rate of pumpage, there is enough water in storage in the northeast Fremont Valley to last a little over one-quarter of a century (25 years). However, the basin will be ruined for potable use by deteriorating water quality long before this time.** Those other alternatives are viable and will not have the irreversible impacts of pumping from the northeastern Fremont basin, saving that water for potable use.

The following is our review of the document.

Very truly yours,

NBS/LOWRY, INC.

John R. Thornton, P.E.
Vice President
Director of Water Resources

JRT/GG/RV/ib

Attachment

cc: Ted James, Kern County
RCWD

RAND\U6417005.RPT

COMMENTS ON THE OCTOBER, 1994 DRAFT EIS/EIR FOR THE RAND PROJECT RANDSBURG, KERN COUNTY, CALIFORNIA

GENERAL COMMENTS

- **Mitigation Measures**

18-1 The mitigation measures cited on the summary matrix at Pages ES-22 through ES-27 of the Draft EIS/EIR only indicate what such measures are. However, in order for such measures to be effective and enforceable, it is imperative that the following components be added to each: 1) the party responsible for their implementation; 2) the party responsible for the enforcement of their implementation; and 3) the timing of their implementation. Such aspects will not only be a requirement of the CEQA-mandated Mitigation Monitoring and Reporting Program (although not acknowledged as a future requirement in the subject document), but are also requested by the Federal EPA Region IX correspondence at Page 1 under *General Comments*, where it is stated: "The EIS should provide substantial detail on the means of implementing mitigation measures, and should also identify how monitoring will be set up to ensure compliance and assess effectiveness of mitigation."

- **Mitigation Measures**

18-2 There exist numerous other requirements of the proposed project which should be listed in the mitigation measure component of the aforementioned summary matrix. In particular, these would include those measures which are cited in Appendix H, the biological assessment for the proposed project, and then restated in Appendix L, the USFWS Biological Opinion Letter.

- **Significance Determinations**

18-3 Although the document appears to provide a relatively straightforward assessment of the impacts of the proposed action, with certain exceptions, the document does not clearly identify which impacts of the proposed project are *significant* or *less than significant*. Without a clear understanding of which impacts are or are not significant, a clear nexus between alternatives and the significant effects they are trying to reduce is undefinable.

SPECIFIC COMMENTS

- **Page 2-27**

18-4 In the second paragraph of Section 2.3.9, *Other Environmental Protection Measures*, the following is stated: "In the event that cultural or paleontological resources, not previously identified, are discovered during development and reclamation activities, operations in the vicinity of the discovered resources shall cease immediately..." What is unclear here is who would "discover" such resources. If it is the applicant's workers, then there needs to be some assurance that they are trained in advance regarding what to look for. This would be no different than the case with biological resources, where on-site workers will be trained regarding sensitive biological resources. If it is the applicant's intent to have on-site cultural resources specialists continually monitor excavation operations, then this comment does not apply.

- **Page 2-32**

18-5 In the second paragraph a proposed "engineered alternative to the CRWQCB-LR prescriptive standard" is proposed and generally described. State and Federal standards shall not be compromised. RMC should be required to demonstrate that the "engineered alternative" is not only <u>equal</u> but <u>better</u> than the prevailing standard.

- **Page 4-9**

18-6 In the next to last sentence of the first paragraph it is indicated that "No site-specific information on the quantity of the surface flows is available." Even when taking this statement as a given, this doesn't mean that simple hydrologic modeling could not be employed to demonstrate what such flows may be. With such information, any change in surface flows due to the proposed action in this regard could be presented in the environmental consequences component of the subject document.

- **Page 4-21**

18-7 Table 4-8 employs data from the second quarter of 1993 for PM_{10}. More current information is available. It is suggested that the subject table be updated accordingly.

- **Page 5-18**

18-8 In the second full paragraph, it is indicated that the ingestion of cyanide solution "is not limited to solution ponds, but includes pooling/puddling on top of leach pads and in drainage/collection channels" and then goes on to say that "cyanide toxicosis **may** [emphasis added] be prevented at heap leach extraction facilities through the initial design of structures..." It would appear reasonable that the design of facilities toward this end be a requirement of the proposed action and would also include the drainage/collection facilities.

- **Section 9 - Cumulative Impacts**

18-9a The discussion of cumulative impacts is incomplete. At the very least, the assessment of cumulative impacts should have considered as one of its related projects, the proposed Consolidated Mineral Resources (CMR) project to be located entirely within the Cumulative Impacts Study Boundary identified on Figure 9-1 of the subject Draft EIS/EIR. The proposed CMR project comprises a request for a Conditional Use Permit (CUP) from the County of Kern for a 40-acre reclamation plan associated with a Research and Development Pilot Mill
18-9b Project. The issues which should be analyzed on a cumulative basis should include, but not necessarily be limited to, air quality, biological resources, water resources, and water quality. This omission argues strongly that the subject document is at best incomplete as is and suggests that recirculation with the requisite cumulative impact analyses included might be warranted.

- **Section 1.5.1 - Air Quality**

18-10 The discussion of air quality does not adequately portray the spatial and degree of impact relationships between the source of fugitive emissions associated with the proposed project and nearby sensitive receptors. Although calculated emissions (particularly PM_{10}) are not expected to exceed established standards, the fact remains that local residents are often the recipients of site-generated fugitives which create a severe nuisance, particularly during period of high winds, a frequent local occurrence. At the very minimum, the project should attempt to minimize such nuisance intrusions by limiting ground-disturbing (especially blasting) operations during periods of high wind speeds. As an alternative, the project could limit its ground-disturbing operations to periods where the prevailing wind direction is away from nearby sensitive receptors.

- **Appendix A**

18-11 This appendix provides a copy of the NOI, NOP, and NOP distribution list. For the sake of consistency, a distribution list for the NOI would be helpful.

■ **Appendix F**

18-12 The subject appendix calls out Tables 1 and 2 and Appendices A and B. We could find no such tables or appendices clearly identified. In fact, upon further review of the subject appendix, its appendices begin with "J," which leads one to believe that Appendices A through I must precede it. One cannot evaluate the merits of the subject technical study without an opportunity to evaluate the technical and analytical foundations upon which its conclusions are reached. Such omissions warrant that consideration of additional time be granted for the review of the subject document with these missing items made available to the reviewer. We reserve the right to further comment based on receipt and review of the missing material.

■ **Appendix H**

18-13 Page 8 of the subject appendix indicates that "The maximum amount of acreage which may be affected is 1,020 acres." It is difficult to tell to which project this refers, particularly in light of the fact that on Page 2-28 of the Draft EIS/EIR it is indicated that the proposed action will disturb up to 511 acres. Please clarify. If, in fact, these two numbers refer to the same action, then the implications for mitigation measure requirements and the viability of certain other impact assessments in the document become obvious.

COMMENTS ON GROUNDWATER SUPPLY COMPONENT

The draft EIS/EIR inadequately:

1. assesses the affected groundwater environment (Sec. 4.4.2),
2. environmental consequences on groundwater availability (Sec. 5.1.4.2),
3. addresses appropriate mitigative measures (Sec. 6.4.2),
4. deals with acceptable unavoidable effects (Sec. 7.4.2),
5. predicts cumulative impacts on groundwater and the Rand Communities Water District wells (Sec. 9.6.2),
6. or seriously considers alternative sources of water to the Rand Mining Company project (Sec. 3.3.1.3).

Elements 1 through 5 above are based upon a June 1994 report prepared by Hargis + Associates (Vol. II, Appendix E of the draft EIS/EIR) which is entitled, "Hydrogeological Analysis for Proposed Increased Groundwater Pumpage, Northern Fremont Valley, California." This analysis was primarily based upon the U.S. Geological Survey model, MODFLOW, which was used to simulate the effects of increased pumping by the Rand Mining Company. In addition to modeling, limited field data was collected and evaluated. The following sections assess the validity of this work relative to the conclusions reached in the draft EIS/EIR.

AQUIFER TEST AND HYDRAULIC PARAMETERS

18-14 Estimated hydraulic conductivity is too low, particularly in the central and western portions of the northeastern Fremont Valley. Estimates are partly based upon a test of production well RMC-4, which apparently is north of the Garlock Fault and about 1,500 feet south of the nonwater-bearing El Paso Mountains. Analyses are based upon the assumption of a flat-infinite water table which is not true. The trouble with the analysis is that the radius of influence from the pumping well is over 5,400 feet after 12 hours of pumping based upon results presented by Hargis + Associates (Sec. 4.3). The El Paso Mountain bedrock to the north and probably the Garlock Fault to the south would be intersected by the cone of depression from the pumped well. Image theory would be required to evaluate the test data. It is probable that hydraulic conductivity was grossly underestimated. In addition to properly modeling water tables with MODFLOW, an accurate estimate of hydraulic conductivity is required in order to accurately assess movement of poorer quality groundwaters in the basin resulting from increased Rand Mining Company pumpage.

18-15 Evaluating the Hargis + Associates test data, assuming Theis theory applies, suggests a storage coefficient that is 0.004, not 0.0004 as was printed in Appendix C in Volume II. Apparently, this is a typographic error. Another interpretation of the test data by ourselves suggests a specific yield of 0.03.

18-16 Conclusions reached by Hargis + Associates (Sec. 5.2) that there is no discernable migration of TDS are not valid. Not only are incorrect hydraulic conductivity parameters used, MODFLOW was not properly calibrated, as will be discussed subsequently. MODFLOW results determine seepage velocities. It is of considerable concern to RCWD that groundwater quality at their wells may deteriorate as a result of increased pumpage and increased overdraft of the basin by RMC. In particular, it is well known that brackish or connate waters underlie Koehn Lake. There obviously is a saltwater wedge extending an unknown distance northeast from the lake. Increased pumping upgradient from the RCWD wells may cause this water to migrate toward the RCWD wells.

18-17 Well testing is completely inadequate concerning the importance of the northeast Fremont Valley aquifer for providing the only economical source of supply for RCWD. Additional wells that are available should have been tested to determine hydraulic parameters. Additional wells

should have been drilled to determine geologic, hydraulic and groundwater quality characteristics of the aquifer.

MODELING ANALYSIS

18-18 In addition to the uncertainty of hydraulic parameters, there are several problems in the application of MODFLOW to the northeastern Fremont Valley aquifer. Perhaps the main difficulty is the assumption of saturated thickness and the vertical geometry of the model. It is well known that valid models that can be adequately calibrated require good geological definition of the area modeled. In this case the configuration of bedrock is unknown. There are too few wells to interpret bedrock configuration and in fact none of the wells in the basin seem to reach bedrock. Indeed, from review of the Hargis + Associates report there is no real calibration of the model because there is no data to calibrate with. It is likely that the modeling results are largely useless.

The above described problem of bedrock configuration could have been avoided by a gravity survey which would determine bedrock configuration with a reasonable degree of certainty. Such a survey could be supplemented with a seismic reflection survey. Strategically located test wells would greatly increase certainty of geological conditions. These wells, as was discussed in the previous section, could enhance understanding of hydraulic and other parameters.

18-19 Another assumption of considerable concern is the assumed model boundary condition in the vicinity of Koehn Lake. A constant boundary condition with heads equal to the elevation of the floor of Koehn Lake was apparently used. First, it is pointed out the Koehn Lake water levels may be entirely different than groundwater levels. If it is true that there is about 8,000 acre-feet per year of agricultural pumpage (less some leaching fraction) in the western area of the model footprint, water levels would be lowered by over 90 feet per year in this area (using Hargis + Associates parameters), assuming no subsurface inflow or outflow. Thus with the assumed model boundary condition, a subsurface inflow would erroneously be modeled. The possibility of simulating an improper boundary condition is a well-known problem by users of MODFLOW and care is required to avoid such problems. As a check on boundary condition errors, it is usually wise to use the water budget output feature of MODFLOW. Why was this not included in the Hargis + Associates report? For this reason alone the model results are probably invalid. Results of a water budget estimate are very important to RCWD since the basin is currently being overdrafted.

18-20 The rationale for assuming recharge (Appendix D of Appendix E) at the Consolidated Placer Dredging (CPD) operation is unclear. The actual calculations of a recharge amount by Hargis + Associates are unclear. Using their numbers for hydraulic conductivity and effective porosity and calculating a travel time to the water table 500 feet below, it would take 27 years for water to reach the water table (see Guymon, 1994). This assumes the dredge ponds remain saturated all this time. The best assumption is to assume this water evaporates and there is negligible recharge. The assumption of recharge by Hargis + Associates results in simulated water levels

that are too optimistic relative to the impacts of RMC pumping upon RCWD wells, a further reason the modeling effort is invalid.

In conclusion, the field testing and modeling work inadequately addresses:

1. the affected groundwater environment,
2. environmental consequences on groundwater availability,
3. or cumulative groundwater impacts.

APPROPRIATE MITIGATIVE MEASURES

18-21a Section 6.4.2 does not adequately address appropriate mitigative measures. This section seems to imply that if impacts on RCWD wells are apparent, then monitoring will commence. Monitoring should begin immediately; both water levels and water quality should be monitored. Because of the configuration of pumping relative to Koehn Lake where connate groundwaters may be found, a deep monitoring well westerly of the RCWD wells is required.

18-21b In fact, it is believed that undesirable impacts are already occurring. The northeastern Fremont Valley aquifer is being overdrafted. Water levels are falling at the rate of 3 to 5 feet per year at the RCWD wells. Replenishment of this aquifer is very slow. Without this water source, the RCWD will not be able to economically supply potable water to the historic communities served by the District.

18-21c Mitigation should identify specifically what RMC is going to do, such as pay additional energy and operating and maintenance costs due to the lower water table; cost of lowering pumps; and cost of water treatment should it become necessary. These costs will probably go on for perpetuity. In addition, RMC should be required to post a bond to cover the costs of mitigation.

AVOIDABLE EFFECTS

18-22 Increased consumption of groundwater and increased overdraft can be avoided by other alternatives. There are several alternatives: purchase water from the agricultural operation east of Koehn Lake and decrease agricultural irrigation by an equal amount; obtain groundwater west of Koehn Lake; or obtain groundwater from the Cuddeback Lake area. No new consumption of groundwater would occur in the northeastern portion of Fremont Valley and overdraft would not be increased.

ALTERNATIVE SOURCES

The importance of potable groundwater to the communities served by RCWD from the only economically available source has not been adequately addressed. The evaluation of alternative sources to Rand Mining Company expansion has likewise not been adequately addressed.

Groundwater can be obtained from the Cuddeback Lake area, from the agricultural operation east of Koehn Lake and decrease agricultural irrigation by an equal amount, or from west of Koehn Lake. The benefit of these alternatives is that no additional impacts to RCWD wells would occur. No additional overdraft to an already seriously overdrafted basin would occur. To state (Sec. 3.3.1.3) that disturbance to desert tortoise critical habitat would occur and reject these alternatives on that basis is absurd. A pipeline could be constructed almost entirely in dedicated rights-of-way or disturbed agricultural or other roadways. Construction would be for a very brief period, and adequate precautions could be implemented to safeguard the very sparsely distributed desert tortoises.

OVERDRAFT CONDITIONS

18-23 Based upon data presented by Hargis + Associates in Appendix E of the draft EIS/EIR, an estimate of current and potential future overdraft in the northeastern Fremont Valley aquifer is presented in Table 1. The area considered is the same footprint as modeled with MODFLOW by Hargis + Associates. While we do not necessarily agree with the individual numbers, the magnitude of the problem is seen in Table 1. The Rand Mining Company proposes to increase overdraft by about 6 percent. Over the next five years when RMC proposes the heaviest pumping, total water in storage in the aquifer will be depleted by almost 15 percent (if Hargis + Associates' estimate of specific yield is used).

18-24 Officials from both the California Water Resources Control Board and California Department of Water Resources have historically opposed overdrafting groundwater basins. Historically, where basins have been overdrafted, economical mitigative measures could be implemented to restore the basins. These include artificial recharge with reclaimed water, imported water, or augmented natural streamflows. None of these alternatives are available here. **At the current rate of pumpage, there is enough water in storage in the northeast Fremont Valley to last a little over one-quarter of a century.** However, the basin will be ruined by deteriorating water quality long before this time.

REFERENCES

Guymon, G.L., 1994, *Unsaturated Zone Hydrology*, Prentice-Hall.

Table 1

HYDROLOGIC BALANCE FOR THE NORTHEASTERN FREMONT VALLEY AREA[a)]

Item	Average Annual Quantity (a-f/y)	
	Current Conditions	Proposed Future Conditions
Pumpage		
Agricultural	8,000	8,000
Rand Communities Water District	65	65
Consolidated Placer Dredging	245	245
Rand Mining Company	440	754[b)]
Subtotal	8,750	9,064
Recharge		
Precipitation	50	50
Ag. Applied Water Infiltration	1,280	1,280
Consolidated Placer Dredging	183	183
Subtotal	1,513	1,513
Overdraft	7,237	7,551

a) Assumes no subsurface outflow or inflow. All current values were taken from the Hargis + Associates report (Appendix E of the draft EIS/EIR).

b) Average for the five-year period 1995-99.

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94 DEC 19 PM 2:22
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Comment
Document
No. 19

Dept. of Interior
Bureau of Land Management
Ridgecrest Resource Area

December 16, 1994

From: J. Robert & Susan L. Lyche
P.O. Box 116
Johannesburg, Ca 93528

Regarding: The Rand Mining Expansion Plan now under consideration

19-1 My wife and I would like to make a request for some type of monitoring system of air quality in the Kelly-Mine area. This is due to the dust (lime and dirt) blowing from the current heap to the San Bernadino County line (outside of the Rand Expansion Plan) into the area of three homes we own.

My mother-in-law lives in one house(#885) and she has been constantly complaining about the dust and has a runny nose everytime they stack the heap. The noise is also a problem, but I know nothing can be done about that. The other two homes are rentals and I'm having a hard time renting one of them (#'s 879&883). I also feel the higher the heap goes, the less dust will drop on these homes, but who knows the exact result. The dust or bad air does affect people differently, but old people (she's 74) seem to be affected more and also for a longer period of time (usually 3-5 days if they have left the heap for her) seem to be more vulnerable. We are sorry we missed the public meeting.

Regards,

J. Robert Lyche

J. Robert Lyche

OWENS PEAK GROUP
KERN-KAWEAH CHAPTER
SIERRA CLUB

Comment Document No. 20

Mr. Ahmed Mohsen
Ridgecrest Resource Area
Bureau of Land Management
300 S. Richmond
Ridgecrest, CA 93555

Subject: Draft Environmental Impact Statement for The Rand Project

Dear Ahmed,

Dec. 17, 1994

Our group wishes me to make a few specific comments, though our position in general is that of Stan Haye, Mining Chair of the Cal/Nev Regional Resource Conservation Committee of the Sierra Club. This letter emphasizes matters of particular interest to our members. Our concerns here are mostly the same ones we commented on for the Briggs Project.

20-1a 20-1b 20-2a 20-2b Though the visual impact of the Rand Mine is important, there is no longer the option of designing the whole thing from scratch; clearly, much disturbance already exists. Still, anything that can help avoid further scenic degradation is worth considering. As we did for Briggs, we ask exactly what mitigation projects make the Preferred Alternative acceptable when lack of them might have resulted in backfilling the new pit. In this case, it looks as if there is plenty of rehab needed in the immediate area of the new project. Again, we consider it inappropriate to use mitigation for this new project in an area distant from it or to do in this way rehab that should be done by whatever other project generated the need. Perhaps rehab of abandoned mines in the immediate area would be reasonable, but is it more so than backfilling? Again, we urge that a qualified landscape architect be present during construction of major features (heap leach piles, benches, etc.). This architect should approve all construction throughout start-up, operation and rehab.

20-3 Again, we are very concerned about monitoring during the whole project. Self-monitoring seems dangerous in any situation, and in this case we have heard rumors of unreported problems with the existing operation. Since we have no clear proof, we can only point out that independent monitoring would help avoid the climate of distrust that we know exists. If there is independent monitoring, the mining company will benefit and perhaps have better credibility. We have heard stories about unreported wildlife deaths; this sort of situation should and can be avoided. The mining company does not deserve this kind of reputation if the stories are untrue. If, on the other hand, there is an element of truth, BLM should know the facts. The monitoring should be stronger than that proposed for PM10 and air quality in general, for particulates generated by road use and for water quality and level.

20-4 Another concern is the geologic model used to study the water use problem. Does the model take into account the effects of fault lines, including the Garlock Fault, on the water table? If not, this could present an important question.

20-5 Finally, we urge that the public be involved in periodic inspections (once or twice a year) and be consulted before sign-off of the rehab at project's end. This will help ensure compliance under CEQA and NEPA.

Thank you for your interest in our views.

Sincerely,

Jeanie

Jeanie Stillwell Haye

Mojave Water Agency

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94 DEC 22 PM 2:31
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Comment Document No. 21

Mr. Ahmed Mohsen
BLM-Ridgecrest Resource Area
300 So. Richmond
Ridgecrest, CA 93555

Mr. William Larsen, AICP
County of Kern
Planning Department
2700 M Street
Bakersfield, CA 93301

December 19, 1994

RE: Draft Environmental Impact Statement/Environmental Impact Report
Rand Project, Randsburg, Kern County, CA
State Clearinghouse Number 93042054

Gentlemen:

21-1 Thank you for the opportunity to comment on the referenced EIR/EIS. The Mojave Water Agency (MWA) has interest in the potential expansion of the existing Rand Mine operation for two reasons. The MWA northwest boundary extends along the San Bernardino and Kern County boundaries up to the vicinity of the Red Mountain area within San Bernardino County. Future expansion of the mining operation could result in potential ground or surface water contamination to areas within the MWA watershed (southeast toward Cuddeback Lake) if proper management practices are not utilized. Additionally, approximately 100 domestic water service connections which are supplied with water pumped from the Fremont Valley ground water basin (which supplies the Project) by the Rand Communities Water District are physically located within the MWA.

21-2 The materials provided in the EIR/EIS regarding local hydrologic conditions and potential impacts to ground water supplies indicate that the Fremont Valley Basin is experiencing significant overdraft. The data also demonstrates that the project will contribute a relatively minor, but significant, increment of increased overdraft to the basin. The component of the Fremont Valley Basin affected by the Project provides

22450 Headquarters • P.O. Box 1089 • Apple Valley, CA 92307 • (619) 240-9201 • FAX (619) 240-2642

George R. Parker, Division #1
Carl N. Dalton, Division #2
Bill A. Christopher, Division #3
Peggy Sartor, Division #4
Thomas H. Irwin, Division #5
Beverly J. Lowry, Division #6
John H. Russell, Division #7
Larry W. Rowe, P.E., General Manager / Chief Engineer

water supply to a number of water users with differing beneficial uses (mining, agriculture and domestic uses), and it may therefore be appropriate for basin water users to consider establishment of a ground water management program for the area, as authorized by AB 3030. Such a plan could establish the means to monitor the ground water basin for changes in ground water elevations and quality, and identify potential to mitigate overdraft through reduced pumpage or introduction of supplemental supplies.

21-3 The information provided did not identify a specific water supply monitoring program, responsible party, or reviewing agency. The document did note, however, that although migration of existing high TDS water toward production wells was modeled and found to be of insignificant effect, the current vertical changes in ground water quality are not known, and therefore potential future water quality changes in wells due to declining water levels are not known. The potential impacts to beneficial uses from declining water levels should be identified, and a ground water quality and water level monitoring program by an appropriate entity should be developed and incorporated into project conditions of approval.

Please contact me at (619) 240-9201 if you have any questions.

Sincerely,

N. T. Caouette

Norman T. Caouette
Director of Planning and Resource Development

c. Planning and Resource Dev. Comm.

Comment
Document
No. 22

Bureau of Land Management
Ahmed Mohsen
300 S. Richmond
Ridgecrest, Ca. 93555

RECEIVED
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94 DEC 19 PM 2:19
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

Mr. Mohsen,

I am writing because of a potentially serious problem between peoples of the Rand Water District and the Rand Mining Company.

22-1 The Rand Mining Company currently has a project on which they are using 1000 gallons of Water per minute. It is our consensus that using so much will pull salt from the Koehn Lake area, which already incompesses the Butterfield Ranch area and 90% of Arcearo,s Randsburg Ranch making the water unpotable for human consumption. And since our annual rain fall and snow levels are low the aquifer is not replinshed as quickly, if any, as other areas.

These salt wells are directly west of our water producing wells. The well of the Rand Mining Co. is north and east of our existing wells (approx. 3 miles).

We wish to sample for salt as they are producing the 1000 gal per minute, but to date RMC has refused to let samples be taken.

We are hoping that with the encouragement of BLM, the RMC will prove to be more co_operative in allowing the water samples to be taken.

22-2 We are a financially poor community and do not have the resources to try and find another water source. Thus we feel the RMC should have to post at least a Million Dollars Bond-- to insure funds would be available to locate new water sources if and when a problem occurs.

We Thank you in advance for any assistance you can provide.

Yours Truly,

Rep.

cc: Wm. Thomas
file

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
CHINA LAKE, CALIFORNIA 93555-6001

Comment Document No. 23

RECEIVED
BUREAU OF LAND MANAGEMENT
94 DEC 22 PM 3:13
RIDGECREST RESOURCE AREA
RIDGECREST, CA.

IN REPLY REFER TO:
11011
Ser C836(823500D)/ 1450
20 Dec 94

Mr. Ahmed Mohsen
Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, California 93555

Dear Mr. Mohsen:

This letter is submitted in response to your request for interested parties to review the Rand Project Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR). We have completed our review of the document and have included our comments as an attachment.

While our specific comments are included in the attachment, we want to bring to your attention that this DEIS/EIR makes little reference to ongoing military air operations in the region and does not address the potential for adverse impacts to those operations resulting from proposed blasting operations or the construction of associated tall structures (greater than 150 feet AGL).

We appreciate the opportunity to review the Rand Project document and request that our comments and concerns be incorporated in the final EIS/EIR. We also ask that we be kept on your reviewers list for future projects.

If you have any questions regarding our review of this document, please contact Mr. John O'Gara, Land Use Planning Office, Facilities Planning Division (C83603(823500D)) at (619) 927-1524.

Sincerely,

Barry W. Kenady

BARRY W. KENADY
Head, Facilities Planning Division
Public Works Department
By direction of
the Commanding Officer

Copy to:
Kern County Planning Department
(Attn: Mr. B. Larsen)

NAVAL AIR WEAPONS STATION, CHINA LAKE, COMMENTS ON THE RAND PROJECT DEIS/EIR

The Naval Air Weapons Station (NAVAIRWPNSTA), China Lake, staff has reviewed the Rand Project DEIS/EIR and submits the following comments on the document for consideration in the preparation of a final EIS/EIR. Our comments focus on three noteworthy issues which include; the recognition of military airspace and ongoing Department of Defense flight operations in the region, air operation safety concerns regarding tall structures (greater than 150' AGL) and air operation safety concerns regarding blasting operations.

A. Department of Defense Air Operations

23-1 The document describes the affected area by discussing its relative location within California and to other communities, and addresses the topography and geology of the site(s). However, there is no mention of the site's location within military special use airspace, specifically as being within a Military Operations Area and in close proximity to restricted airspace. The only reference to military aircraft was on page 4-40 in discussion of noise wherein the proponent attributes a portion of ambient noise to "sonic booms from military aircraft".

We recommend that the DEIR/EIS address the relationship of military flight activity to the mining operations by including a description of the R-2508 Special Use Airspace Complex in the document text. We propose that the following wording be added to the DEIS/EIR, under the Traffic/Circulation element, "Current mining operations and the additional areas affected by the proposed action are located under the Department of Defense's (DOD's) R-2508 Special Use Airspace Complex, specifically, the Isabella Military Operations Area (MOA) which permits military aircraft operations as low as 200 feet above ground level. Almost directly east of the affected area is the Edwards Air Force Base/Air Force Flight Test Center's Restricted Area R-2515, which permits supersonic and other military activity at all altitudes. Military flight operations, including sonic booms, are considered to be compatible with mining operations currently conducted or proposed in this document."

B. Air Operations Safety Concerns Regarding Structure Height

23-2 The DEIS/EIR presents a discussion of the construction needed to support the proposed action but describes no specific structures other than the building of some roads. The NAVAIRWPNSTA, China Lake, has safety concerns with any proposed structures of more than 200' above ground level (AGL). Structures greater than that height will also require a Federal Aviation Administration (FAA) safety review. As a matter of routine flight safety planning, the NAVAIRWPNSTA, China Lake, would like to be advised of any proposed structures (temporary and permanent) whose heights exceed 150' AGL. Table 1-1 (page 1-6) of the DEIS/EIR lists all permitting requirements addressed by the proponent but does not mention the FAA as a contacted agency. We request that information on all structures (temporary or permanent) of heights of 150' or more required by the proposed action be included in the Description of the Proposed Action (section 2). Please indicate if any of these structures have been coordinated for approval with the FAA, in accordance with Federal Aviation Regulation Part 77."

C. Air Operations Safety Concerns Regarding Blasting/Flyrock

23-3 The NAVAIRWPNSTA, China Lake, is concerned about the safety of our air operations in the vicinity of the Rand Project and the potential for adverse impacts to aircraft from associated blasting activity. We request that the proponent work with China Lake staff to prepare a Letter of Agreement (LOA) with the R-2508 Complex Control Board to develop and implement appropriate inter-agency coordination procedures to assure mutually compatible operations continue between the participating Parties. We recommend that this issue be addressed in section 8., Other Required Impact Considerations and request the following wording be inserted to address air operations safety concerns; "Blasting operations may create a potential hazard to airspace users from flyrock up to 400 feet above ground level. The R-2508 Complex Control Board (CCB) has management responsibility for all military activity conducted within this area. To address DOD concerns of potential impact to military flight operations, Rand Mining Company will enter into a Letter of Agreement with the CCB to address coordination procedures for blasting activity."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Comment Document No. 24

December 20, 1994

Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, California 93555
Attention: Mr. Ahmed Mohsen

Dear Mr. Mohsen:

The U.S. Environmental Protection Agency (EPA) has reviewed the **Rand Project Draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR)**, prepared by the Bureau of Land Management (BLM) and the Kern County Planning Department. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and §309 of the Clean Air Act.

The Draft EIS/EIR evaluates the construction and operation of a conventional heap-leach processing project that would disseminate gold from ore recovered from an open pit excavation mine in eastern Kern County, California. Ore would be processed at a rate of approximately 6 million tons annually for approximately 10 years. At its completion, approximately 511 acres of land would be disturbed by this proposal. Decommissioning of the site and final reclamation would occur for about 1-2 years after completion of operations.

We have rated this Draft EIS/EIR as EC-2 -- Environmental Concerns-Insufficient Information (See the enclosed "Summary of Rating Definitions and Follow-Up Action"). Our rating reflects the need for additional information in the Final EIS/EIR regarding possible impacts to surface water, wildlife habitat, closure of the heap leach pad, and contingency measures. The Final EIS/EIR should discuss the relationship between the proposed mine and the new California Desert Protection Act, and should include information pertaining to the reclamation or maintenance of the heap leach pad after project completion.

We have also assigned the EC-2 rating because the document only fully assesses 2 alternatives, the project proponent's proposal and no-action. The FEIS should include a range of reasonable alternatives as required by CEQ regulations [40 CFR 1502.14]. The DEIS Abstract lists 4 alternatives that would be assessed "in detail," but the DEIS itself includes only a brief rationale for the elimination of the 3 "action" alternatives.

The FEIS should include much more detailed analysis of alternatives such as a "Reduced Project Alternative" or provide greater rationale for eliminating such alternatives.

We appreciate the opportunity to review this Draft EIS/EIR. Please send a copy of the Final Environmental Impact Statement to my attention at the letterhead address (mail code E-3) at the same time it is officially filed with our Washington, D.C., office. If you have any questions, please contact me at (415) 744-1584 or Edward Yates of my staff at (415) 744-1571.

Sincerely,

Carolyn Yale (for DF)

David J. Farrel, Acting Chief
Office of Federal Activities

enclosure
MI#001902

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommend for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

Alternatives

24-1 The Abstract describing the proposed action states that, "Four alternatives to the Proposed Action are analyzed in detail in the Draft EIS\EIR." These alternatives include no action, reduced project, facility location and partial backfilling. Such a range of alternatives would be a proper range of reasonable alternatives as required by CEQ regulations [40 CFR 1502.14]. However, the document itself does not include a detailed alternatives assessment for the latter 3 alternatives. Instead, the DEIS only includes a brief analysis for each of the 3 alternatives to support the decision to eliminate those alternatives from consideration. Such brief discussions do not qualify as "in detail" as reported to the public in the Abstract.

The FEIS, therefore should include a detailed analysis as required by CEQ regulations. We suggest that the EIS include a more detailed discussion of the reduced project alternative. That the impacts of a reduced project alternative are significant do not alone render such an alternative unreasonable and subject to elimination. Such a discussion does not have to repeat the applicable analysis made in the Baltic Mine EIS [pg. 3-6] but must include a summary of the findings of the Baltic Mine EIS and a description of how such an alternatives analysis applies to the specific environmental setting of the Rand Project.

Water Resources

24-2 1. pg. 6-2: The DEIS does not clearly describe the extent of the potential impacts to creeks (including ephemeral), springs, and seeps (e.g. specific flow reductions, acreage affected, seasonal effects, number of decades the effects would occur). Furthermore it appears that there is little groundwater monitoring proposed for the project. It is unclear what the potential impacts to groundwater/surface water quantity would occur during the 12-year life of the project. EPA objects to reduced surface flows that may adversely affect beneficial uses and/or habitat. The FEIS should discuss avoidance, minimization, and mitigation of losses or modification of surface waters, habitat, and plant and animal species composition.

Water Quality and Hydrology

24-3 1. pg. 2.39: The mine pit would divert stormwater runoff from areas adjacent to the project; other flows would be permitted to pass through the pits. Severe rainfall could cause substantial amounts of water to accumulate or "pond" in the mine pit. Under No Action conditions, such water would be expected to flow unimpeded through the project site. The Final EIS/EIR should examine the amount of water that would be diverted and the effects to any downgradient riparian habitat should be addressed.

Furthermore, the Final EIS/EIR should address why project reclamation design does not include features to divert stormwater flow around the mine pit and back to its normal course.

In presenting the above information, the Final EIS/EIR should include an assessment of whether the water diverted to the mine pit would be considered "waters of the U.S.," and therefore be subject to Section 404 of the Clean Water Act.

2. pg. 5-5: We suggest that the Final EIS/EIR include discussion of methods by which water could be diverted from the waste rock piles, mine pit and heap leach pad. Such methods could include run-on and run-off channels.

California Desert Protection Act

24-4 1. pg. 4-42: The Final EIS/EIR should include an update of all aspects of the project that may have been affected by the recent passage of the California Desert Protection Act.

24-5 2. pg. 5-14: The DEIS only looks at existing Class I airsheds. The Final EIS/EIR should disclose whether the newly designated Wilderness Areas in the region of the project site, as well as Death Valley National Park, will be designated as Class I airsheds under the Act. If so, the project should be reexamined with regard to the relatively stringent standards imposed on Class I airsheds and their vicinities.

Closure and Reclamation

24-6 1 pg. 2-62: The Final EIS/EIR should disclose whether the heap leach pad would be remain in place in perpetuity, or eventually reclaimed. The Final EIS/EIR should also identify who would be responsible for reclaiming the heap leach pad. If the heap leach pad is not to be reclaimed, a rationale for this decision should be provided.

2. pg. 2-62-63: The Final EIS/EIR should specify the requirements for testing the adequacy of heap leach rinsing. Recirculation of the leach solution and rinse solution may result in accumulation of other metals and constituents besides cyanide if gold and silver are the only metals removed from the pregnant and rinse solutions, as described on Draft EIS/EIR page 1-1. After neutralization and treatment of the heap leach material has been conducted and effluent standards have been met, subsequent testing of heaps may reveal increased concentrations of cyanide and other constituents. We recommend that, after neutralization and detoxification standards have been met, subsequent sampling

of the heaps be conducted following periods of rain before the heap material is deemed "clean."

In addition, it is unclear that the heap leach would be effectively rinsed. Incomplete neutralization or treatment of cyanide in heaps can be caused by blind-offs, less permeable lenses or isolated areas of a heap, which affect percolation and fluid flow through the heap. Preferential flow paths and blind-offs (areas or pockets of the heap leach that are avoided by the course of the rinseate) increase with time and the volume of liquid used. If the heap leach material is of relatively fine size, it could require a long rinsing period. Preferential flow paths can limit the effectiveness of treatment and may leave pockets of contaminants behind in the heap. The Final EIS/EIR should specify the particle size of the heap leach materials, how the heaps would be sampled, what other constituents besides cyanide would be analyzed, when and how often heaps would be sampled, and the specific rinsing standards that would be applied.

3. pp. 2-62 to 63: As stated above, EPA recommends that sampling of the heap leach pad be conducted at least several months after rinsing activities are conducted. To further enhance testing accuracy, we recommend that solid core sampling be conducted to test rinse standards as opposed to the less-accurate method of sampling the rinseate.

4. pg. 2-63: The Final EIS/EIR should present a contingency measure or series of measures that would be enacted if rinsing standards cannot be conventionally achieved.

24-7 5. pp. 2-47: According to the Draft EIS/EIR, the seed mix that would be used to revegetate the project site during reclamation would include plant species "adapted" to the area. EPA recommends that BLM consider seeding only native or indigenous plants.

PLANNING DEPARTMENT
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RESOURCE MANAGEMENT AGENCY
JOEL HEINRICHS, AGENCY DIRECTOR
Air Pollution Control District
Airports Department
Engineering & Survey Services Department
Planning Department
Transportation Management Department
Waste Management Department

December 20, 1994

FILE: Gen Corres

Comment Document No. 25

Bureau of Land Management
Attention Buzz Todd
300 South Richmond Boulevard
Ridgecrest, CA 93555

Re: Rand Project Draft Environmental Impact Statement/Environmental Impact Report

Dear Mr. Todd:

This Department is in receipt of the above-referenced document and offers the following comments in response. These comments are intended to clarify possible inconsistencies with respect to reclamation practices and Surface Mining and Reclamation Act of 1975 (SMARA) requirements.

(1) Section 2.3.7.1 - Reclamation Goals

25-1a (a) Reference is made to reclamation goals within the proposed plan as being consistent with land use goals for the area. These goals are: future mining, wildlife habitat, recreation, and sheep grazing. SMARA Sections 2772 (g) and (h) require that the reclamation plan include a description of the proposed end use and that reclamation measures be adequate for the proposed end use. End use refers to the proposed use of the land after cessation of mining and completion of site reclamation. Mining is not considered an end use under SMARA.

25-1b (b) This paragraph also cites that reclamation activities would be in accordance with the regulations found at 43 CFR 3809.1-3(d) and 14 CCR 3500. The correct terminology should state "43 CFR 3809.1-3(d) and the Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Section 2710 et seq.) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) Title 14, Chapter 8, Article 1, Section 3500 et seq.; and Article 9 Section 3700 et seq)."

(2) Section 2.3.7.3 - Revegetation Activities

25-2a (a) Table 2-14 indicates species for use in the seed mix for final reclamation of the Rand Project. On page 2-57, under "Seeding Mixtures and Rates," it is indicated that seed mixtures presented are preliminary in nature. The table should be clarified to indicate preliminary seed mixture for final reclamation. Furthermore, if past experience from the West Valley Stockpile Baseline Study proves consistent, revegetation with grasses may need to be justified.

(3) Section 2.3.7.5.1 - Vegetation

25-2b (a) On page 2-67 of the document, "cover and species richness" has been eliminated from the criteria sampling to be performed. SMARA Section 3705(a) specifies that the vegetative density, cover, and species richness of naturally occurring habitats shall be documented in baseline studies carried out prior to the initiation of mining activities. This type of study was most recently done for the recently approved West Valley Stockpile which is an integral part of the Rand Project.

25-2c (b) Page 2-68 indicates that revegetation monitoring will be on a biannual basis. Pages 2-65/66 indicate that at a minimum monitoring would take place during peak growth and flower time, usually April or May. Page 2-69 indicates than an annual report summarizing the findings of the monitoring program will be submitted. Monitoring parameters should be clarified. Staff suggests yearly monitoring reports which would easily tailor into the annual mining inspection process required by SMARA.

25-2d (c) Page 2-68 specifies 21 percent or more vegetation density and 15 percent vegetation diversity as constituting successful revegetation. Staff has noted that the recently approved West Valley Stockpile originally proposed a 35 percent cover as the basis for determining successful revegetation. A basis for the parameters proposed should be established.

(4) Section 2.3.8 - Financial Assurance

25-3a (a) This paragraph states that each year the new bond amount would reflect the amount of concurrent reclamation performed in the previous year and the amount of planned construction and operation activities in the next year. Table 2-15 identifies estimates of what would appear to be total reclamation costs for the project in its entirety. Staff suggests that either the statement or the table be revised to clarify whether phased bonding is proposed or that sufficient bonding will exist to complete reclamation in accordance with the approved plan on any existing disturbed acreage within any particular calendar year should Rand Mining Company (RMC) be unable to do so.

25-3b (b) Table 2-15 estimate costs should be clarified or expanded upon to ensure that all reclamation costs required by Section 19.100.030.L(11) of the Kern County Zoning Ordinance are included (i.e., removal of fencing (including tortoise), long-term stabilization (including revegetation, monitoring, and retention of consultants), soils tests, drainage and erosion control, final engineering design, and liability insurance. Unit costs for equipment should be expanded upon to ensure that they include costs of labor and supervision.

25-3c (c) On page 2-72, paragraph 4, RMC indicates that they will perform reclamation on 37 acres of historic disturbance. This is not shown in the reclamation costs, nor should it be, since disturbance after January of 1976 is not required to be reclaimed. However, the Office of Mine Reclamation may question this exclusion and want justification. Furthermore, if this reclamation is being required by the Bureau of Land Management,

will the costs for such reclamation be included in the Rand Project bond or held in a separate bond, since RMC is not obligated to perform such work under SMARA requirements.

If you have any questions, please contact Scott Denney at (805) 861-2615.

Very truly yours,

TED JAMES, AICP, Director
Planning Department

By Scott F. Denney
Associate Planner

lc

(G:\MISC\RANDEIR.LTR)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD -
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RECEIVED
RIDGECREST, CA.

Comment Document No. 26

December 20, 1994

Kern County Planning Dept.
2700 M St., #100
Bakersfield, CA 93301
Attn: Bill Larsen

Dear Mr. Larsen:

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT (EIR)/ ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE RAND PROJECT, KERN COUNTY - STATE CLEARINGHOUSE NO. 93042054

Thank you for the opportunity to comment on the above-referenced document. The proposed project would consist of extension of the life of existing mining operations at Rand Mining Company's Rand Mine, for an additional nine or ten years. Activities would include:

a. Expansion of three existing open pits (Yellow Aster, Baltic, and Lamont).
b. Development of a new pit.
c. Construction of a new heap leach pad, with associated ponds and processing facilities, in the Lamont Valley.
d. Expansion of the existing West Valley waste rock pile.
e. Construction of a new waste rock pile in the Lamont Valley, if necessary.
f. Continued exploration for future sources of ore at the site.

The California Regional Water Quality Control Board, Lahontan Region (RWQCB) will be a responsible agency for the project under the California Environmental Quality Act (CEQA), and will consider issuing waste discharge requirements. RWQCB staff have the following general and specific comments regarding the draft EIR/EIS and the proposed project.

<u>General Comments</u>

1. VADOSE ZONE MONITORING

The proposed liner and vadose zone monitoring system for the heap leach pad consist of the following:

a. Liner

26-1a One 60-mil high-density polyethylene (HDPE) liner will be placed over a compacted, fine-grained soil foundation. Above the liner will be a 12-inch layer of fine-grained material to serve as a cushion layer. Above the cushion will be an 18-inch layer of drain rock which will serve as the leachate collection and recovery system.

The proposed liner is an engineered alternative to the Title 23, Division 3, Chapter 15, California Code of Regulations (Chapter 15) prescribed liner for a Class B waste pile (Chapter 15 prescribes a two foot layer of clay compacted to a maximum permeability of $1x10^{-6}$ cm/sec). The proposed liner is the same as that being used for the Baltic heap leach pad. Chapter 15 allows engineered alternatives to the prescriptive standards, provided certain findings can be made. Specifically, it must be demonstrated that the prescriptive standard is unreasonably burdensome and costly <u>or</u> impractical and unable to help achieve applicable performance standards. In addition, it must be demonstrated that the engineered alternative is consistent with the performance goal addressed by the prescriptive standard and that it affords equivalent protection against water quality degradation.

b. Vadose Zone Monitoring

26-1b The vadose zone monitoring system will consist of a branching configuration of 5 foot wide by 100 foot long strips of 20-mil HDPE overlain by geonet and a geotextile. This system would underlie approximately 3% of the entire liner area.

There is no mention made of the permeability of the compacted foundation material upon which the vadose zone monitoring system (and the liner) will be placed. If the foundation layer is not of low permeability, then leakage which occurs on any portion of the liner not underlain by the vadose zone monitoring system will percolate downward, rather than flowing into the vadose zone monitoring system. If such were the case, leakage from 97% of the liner area could go undetected. Therefore, we will require that the foundation layer be compacted to a permeability of no greater than $1x10^{-6}$ cm/sec, to ensure that all leakage from any portion of the liner will be detected in a timely manner.

2. CHEMICAL CHARACTERISTICS OF MINED MATERIALS

a. Metals

26-2a The soluble metals in the mined materials were determined using a modified WET (waste extraction test) procedure, using deionized water as the leaching solution. Data from this testing showed high, but not hazardous, levels of arsenic in nearly every sample. Deionized water was used as the leaching solution, because acid/base accounting showed that acid mine drainage will probably not occur at the site. However, the site may be subject to acidic precipitation. Records provided by the Air Resources Board's Research Division indicate that the pH in precipitation at Mammoth Lakes and at Victorville ranges from 5.0 to 5.2. If the pH of the

deionized water was not within this range, the project proponent will be required either (1) to provide data showing that the pH of precipitation at the site is, in fact, similar to that of the deionized water used in the test or (2) to conduct additional tests with deionized water at a pH ranging between 5.0 and 5.2 in order to more closely approximate the actual conditions at the site.

26-2b b. Acid/Base Accounting

We would like specific data regarding the types of samples, sampling protocol, sample depths, etc. involved in developing this accounting. Specifically, we wish to ensure that the materials which will be exposed to the elements once excavation is complete (the materials which will remain exposed in the walls and floor of the pits) have been fully characterized for acid generation/neutralization potential.

26-3a 3. PIT BACKFILL ALTERNATIVE

The analysis of this alternative needs to be more complete, as far as the benefits and drawbacks. Specifically, impacts to ground water quality have not been considered in the analysis. Ground water exploration has been conducted, but not beyond the final pit bottoms, meaning that depth to ground water beneath the pits may actually be relatively shallow. In this case, ponded water may easily carry contaminants to the ground water. Unless the project proponent can demonstrate that ground water is significantly deeper than the proposed mining depths, impacts to ground water should be considered to be potentially significant.

26-3b We request, also, that this alternative be evaluated using waste rock only for backfilling. This would allow backfilling to occur during the active life of the project, would not require post-closure backfilling activities (returning the spent ore to the pits), and would probably be subject to fewer of the negative impacts identified for the alternative. In addition, the final
26-3c EIR/EIS should explain why the pits cannot be fully mined in a sequential fashion, allowing waste rock from subsequent pits to go into previously completed pits.

Please note that the Regional Board is required to consider economics as a factor when determining the appropriate type of requirements to place on a particular activity. Economics may be an overriding constraint on implementation of this alternative. However, we would like to make sure that <u>all</u> environmental impacts are fully explored in the consideration of this alternative.

26-4 4. SITE DRAINAGE

What is the ultimate fate of stormwater runoff from the site? Stormwater channels and ephemeral drainages are considered to be waters of the State and, as such, need to be protected from the influx of contaminants. If runoff from the site is reaching offsite drainages, the National Pollution Discharge Elimination System (NPDES) General Industrial Stormwater Permit may be applicable to this site.

Specific Comments

Page 2-16) Paragraph 2

26-5a How are process wastes, such as spent carbon, chemical containers, etc. stored prior to disposal?

Page 2-19) Paragraph 3 - Chemical Storage

26-5b How often are the various chemical containers/storage areas inspected for leakage? We would like to get a copy of the spill cleanup plan.

Pages 2-21 and 2-21)

26-5c These pages provide a table showing types, quantities, storage methods, and locations of the various chemicals used onsite. Most of the liquid chemicals appear to have secondary containment, but some do not. Please provide a breakdown in the table showing the quantities of chemicals stored at each storage location, rather than just a figure for the total amount stored on-site. In addition, please explain why some of the liquid chemicals are not provided with secondary containment.

Page 2-24) Paragraph 1

26-6 This paragraph discusses materials used for dust control. Are any chemical dust suppressants other than sodium lignisulfate used for dust control? If so, please include them in this discussion. Also, is there a plan for dust suppression material application, to minimize use and runoff of the material? Are any of the dust suppression materials ever applied in sufficient quantities to result in runoff? If so, where does the runoff go?

Page 2-34) Paragraph 1

26-7 This paragraph describes the volume of solution which would occur in the ponds at each facility, with a 2 foot freeboard, following a design (100-year/24 hour) storm event and a 24 hour power outage. How would these large volumes of solution be handled following the restoration of power? Possible options include running the solution through the process, allowing it to evaporate, or pumping it out of the ponds for disposal elsewhere. If the third option is selected, where would discharge occur?

Page 2-60) Paragraph 2

26-8 As discussed above, although ground water has not been encountered in drilling to depths of 500 feet, ground water quality may still be impacted by water accumulating in the pits. Specifically, because the deepest pit will be more than 500 feet deep, ground water may be in close proximity to the pit bottoms. Unless the project proponent can demonstrate that ground water is significantly deeper than the pit bottoms, ground water impacts should be assumed to be possible, and evaluated in this document.

Page 2-68) Paragraph 1

26-9 This paragraph discusses the criteria for successful revegetation. Why is 21% density considered successful? Please cite references. Also, if the revegetation effort is found to be unsuccessful, further restabilization efforts, either vegetative or mechanical, will be required by the Regional Board, in order to minimize erosion and sedimentation.

Page 3-3) Paragraph 1

26-10 This paragraph describes the alternatives which were considered and rejected, and states that they were evaluated in the same manner as they were for the Baltic Project. Portions of the Baltic Project EIS/EIR are incorporated by reference. The incorporation does not provide the information required under State CEQA Guidelines Section 15150, including the location where this document is available to the public, a summary of the incorporated information and the State Clearinghouse number. We suggest that the 20 incorporated paper be made an appendix to the final EIR/EIS.

Page 3-9) Paragraph 2

26-11a One of the negative impacts identified for the backfilling alternative is the temporary surface disturbance resulting from the storage of waste rock prior to backfilling. Since this area is proposed for permanent disturbance under the preferred alternative, but only for temporary disturbance plus ultimate restoration under the backfilling alternative, this does not seem to be a true negative impact.

Page 3-14) Paragraph 1

26-11b Another negative impact predicted for the backfilling alternative is the expanded volume of materials resulting from the "swell factor", which will prevent all the materials from fitting back in the holes from which they were mined. We suggest that to avoid this impact, the final EIR/EIS should consider backfilling only the waste rock materials.

Page 5-5) Paragraph 2

26-12 In the highly unlikely event of a storm event greater than the design storm, the cyanide ponds could overflow, sending diluted process fluid into drainages offsite. The project proponent is only required to securely contain the flows from the design storm (24-hour/100-year event), so an overflow would not constitute a violation of waste discharge requirements. However, overflowed materials may contain hazardous materials in toxic amounts, which could impact downgradient beneficial uses. In addition, transport via stormwater of toxic materials to waters of the State (including ephemeral drainages) would constitute a violation of the NPDES Stormwater regulations. Therefore, we will require that the project proponent conduct monitoring and any necessary cleanup activities to minimize such impacts following an overflow event.

Page 5-15) Paragraph 1

26-13 Mention is made here of the 132 acres of proposed open pit area which will not be revegetated. The reclamation proposal mentions grading, but no other stabilization measures to be conducted within the pits. Impacts to water quality resulting from wind erosion and transport of dust should be considered and mitigated in the final EIR/EIS.

Page 6-2) B-3

26-14 We would like to obtain a copy of the erosion and sedimentation plan.

Again, we thank you for the opportunity to provide our comments. We look forward to reviewing the final EIR/EIS. If you have any questions or comments regarding this matter, please contact me at (916)542-5426 or Diana Henrioulle-Henry at (916)542-5437.

Sincerely,

Ranjit S. Gill

Ranjit S. Gill, Ph.D.
Chief, Planning and Toxics Section

cc: BLM-Ridgecrest Resource Area/Ahmed Mohsen
Rand Mining Company/Ted Naylor
State Clearinghouse
VVL/Tom Rheiner
Regional Board Members
U.S.EPA, Region IX/Jacqueline Wyland

DHH/sh10-rand-eir.com

Bill Larsen

CPY: YOUR FILE

Comment Document No. 27

To: Daily Independent
224 E. Ridgecrest
Ridgecrest, Ca 93555
(B) 619-375-4481

Fm: Gene Barilotti
4192 Kimberly Ln.
Oceanside, Ca 92056
(H) 619-724-3407

Alternate Address
P.O. Box 75
Randsburg, Ca 93554

Subject: Rand Water Rights

There is a very clear and present danger to the Rand water source. This is a on-going desert problem of water rights in the Rand Area which includes Red Mountain, Johannesburg, and Randsburg.

If ignored through apathy, this could eventually lead to a $75 million class action law suit from the citizens of Rand area and the Rand Communities Water Company (RCWD).

Estimating 500 persons in the Rand area, and that the water could be undrinkable for 100 years, that $500 per person per year in water loss is a reasonable recompension, the total would come to $25 million. Double that figure for property damage (Who would buy property with bad water?), and add $25 million for pain and suffering, you get $75 million total damages.

The problem revolves around the request of the Rand Mining Company (RMC) to expand their mining operations. This request has now been formalized by a Environmental Impact Report (EIR) draft, as of Oct 94, with a 60 day public comment review peroid. The lead agencies of the EIR draft are Kern County and Bureau of Land Management.

The RMC are not the bad guys. After all, you cannot fault a Company that provides jobs, revenues to County, State, and US Goverment, and stimulates the economy of the business interests of the Rand as bad Guys. Also, its easy to understand RMC needs water to heap leach the gold. In a Capitalistic system men are free to pursue wealth.

RMC and RCWD are not the only ones who pump water in the North East sector of Fremont Valley. There are two other major mining users; the Boral Resources asphalt plant (216,000 gpd) and Consolidated Placer (4 wells @ 30,000 gpd). All others are intermittent minor production.

However, this may be "the staw that broke the camel's back". When this frayile pool is over-pumped and a major brine concentration occurs, the Rand water may be undrinkable for 100 years, or may never recover. Inyokern water production is more closely monitered by their City fathers since their water quality has degraded from over pumping, but it is a "bell-wether" indicator of what can happen to a small desert town.

RCWD WELL #2 pumping data indicates a 75 ft. decline in water level. Kern Co.and BLM must now protect the Water rights of its desert citizens by holding the RMC to 400 gpm limit and set limits for all Rand users.

Fm: Gene Barilotti
4192 Kimberly Ln.
Oceanside, Ca 92056
(H) 619-724-3407

Alternate Address
P.O. Box 75
Randsburg, Ca 93554

Subject: Rand Project, Draft EIR SCN93042054, Oct 1994

INTRODUCTION: In reading Voume 1, I selected out information regarding my concerns that directly influence my quality of living in Randsburg. These concerns boil down to (1) Water (2) Noise (3) View, in that order of importance. I consider myself as one of the 500 (Phone Book Est.) or so families resident in the tri-town Rand area. I do consider myself and family as "The Real Endangered Spieces"

My qualifications are that: I'm a Electronic Engineer (retired NAWS), partime Rand citizen, not Socio-Economically connected to the mine, and do not consider the Rand Mining Company, as "The Bad Guys".

However, I don't for a moment fully trust a "glowing" report which paints everthing rosy. So, I've tried to read the report and question the material about vague or "sins of ommission" information.

Included is a copy of a newpaper artice intended to generate some Public interest for your reference. Rand does care about their quality of life, but the people are in apathy and fearful of the formal EIR process.

When you receive this please direct questions in handwritten notes by mail. I'll call back within two weeks as I'm on travel at least two weeks per month and often hard to reach. I will contact you by phone soon.

EIR INPUTS

Notes from the EIR Volume 1, Chapters 1-13. Prepared by RMC.
ES = Excutive Summary; Chapter 1, Page 1 = 1-1, etc..

27-1 Notice of completion (Suppl. Doc. M), SCH 93042054, under Project Description: ..."development of 2 cyanide heap leach pads with associated solution ditches and ponds; development of 2 mineral recovery plants;..."

Question? How much total water to be used at these new facilities?

27-2 ES-5 Under "Reclamation Activities..." Ce: Bonds;

As I've outlined in my Newspaper Article, if the only two good water wells available to the RCWD go sour, The law suits could be as high as $75-100 million. (Mr. Jay Friel, Southern Sierra Drilling Co., states that the present RCWD wells are located in the "only good" water location of the entire North-Eastern Fremont Valley) Since, the RMC would be a 10% ? user, they should bear 10%? of the damage. I feel that their estimate are too low; $10 million would be more realistic. How much would it cost to find water, and pipe it from another source? Or how much would it cost to set-up and maintain a water conditioning plant to re-condition the brine water for 100 years?

27-3 ES-8 Surface Water Hydrology: Will the new "wash-out" drain pipes under #395, 1/2 mile So. of the railroad tracks, cause any new Problems?

27-4 ES-9 (2nd Para.) How much groundwater use in Fremont Valley, "...to a lessor degree..." do agricultural users in the North-East of Koehn Lake use?

27-5 ES-10 "As many as (6) agricultural irrigational well..."

Comment: There are a lot of facts and figures here. How about a table showing the "major users (4)" of the North-Eastern Fremont Valley, listing the amount they use, percentage recharge of each, and efficiency column.

Question? Also, is Consolidated Placer Dredging (CPD) doing business for the RMC? If, so how much did CPD gpd increase because of that?

Question? (2nd Para.) How would the usage decrease if mining is increased in 1997? No where in the report is a reason stated why or how?

Question? Total pumping at 7,200,000 gpd (3rd Para). Ok, where (location) and how does the recharge come from?

Also, the data here is hard to connect to see the overall picture of the four major users. If CPD has 75% recharge, what about the other three users: RCWD, Boral Resources asphalt plant, and RMC?

Getting a handle on usage vs recharge of each, by constructing a breakdown table showing water production, evaporation, and recharge rates is mandatory to fairly determine fiscal responsibility. Recharge by nature and the four major users must equal the source or we all lose.

27-6a If RCWD Well #2 is dropping 2 ft. per year, it's obvious that input water does not equal output water. The water has dropped 45 ft since 1979, but how much of that drop occured in the last 3 years when RMC became a major user? Is this a linear or logarithmic curve? If the report gave a full disclosure of years verses water table decline with an plotted curve, the trending could show that serious problems could develop in 5 years. There is no way to predict. I trust the computer model program, but I do not have the time or resource to check the validity of the data fed in. A simple plotted curve of "What-is" data would serve as a "reality-check" on the computer models.

27-6b ES-12 Para 3 What chemical types are in the RCWD wells? And has the 500 to 1000 ppm increased in recent (3-5 yrs)times? Again the report needs a plotted curve, or at least a statement of "No signicant increase observed".

27-7a ES-16 Visual The view from OP#1 and along Butte and Lexington Aves has changed drastically. It no longer looks like a mountain, it looks like big piles of dirt.

27-7b ES-16 Noise Both my front windows are cracked from blasting overpressure.

27-8a 2-17 "All water used in processing of ores which does not evaporate is recycled." How much water is recycled? Is there a recyling water plant or is it pumped back into the ground? Does this contribute to Recharging?

27-8b 4-14 & 15 RMC-4 has the biggest production, and is about at the same water table depth as RCWD #1 & 2. This should be the well to be monitered by RMC and reported on monthly to the lead agencies and RCWD

Also, lead agencies and RCWD should have access rights to all RMC well water meters (RMC-1,2,3,4, &5) to record total acre-feet used per month at each of the five wells.

27-8c Further a total monthly limit should be set, based on RMC total water production in 1994, and used as a "cap" from 1995 to 2010 with review every year to readjust the "cap" to reflect the moniter well and RCWD data.

5-6 "...considered a temporary use because of a limited time frame of the project..." (12-15 years)

Comment: Disagree for two reasons: (1) Overpumping in one year could destroy a well forever in one year. (2) RMC will leave when the gold runs out. Maybe sooner, maybe later. Now is the time to place water "cap" on RMC, and the three other major users.

27-9 5-17 Question? Has the Chukars been considered? They use fiddlers gulch paralel to Lexington as a migratory trail.

27-10 5-25 Question? How many employees of 146 were native permanent residents prior to RMC startup?

27-11 6-2 (6.4.2 whole para) Comment. Disagree! See 4-14 & 15 comments above. This is not a problem that can be mitigated or repaired without a major disruption to the whole Rand area. Waiting for a problem to occur and then trying to reverse it, is irresponsible and foolhardy. A plan after a major problem occurs would be useless. That kind of verbiage places the 500 Rand residents on the endangered spieces list. The RMC is one of four major water users in the Rand area. Somehow, we must learn to survive together or we will all sink in the brine pit.

12.3. Responses to Comments Received

Responses to the substantive comments received on the form or content of the Draft EIS/EIR are presented in Table 12-3. The first column of Table 12-3 provides the comment code(s) of the comment(s) responded to by the response, which is presented in column 2 (because in some cases more than one substantive comment was received on the same topic or subject, some responses to comments respond to more than one comment). Responses to comments have been grouped by subject matter and topic, generally in an order corresponding to the Table of Contents of the Draft EIS/EIR. Cross references to other responses are provided when the subject matter of one response overlaps that of another response. In addition, references to those sections of the Final EIS/EIR which have been modified to reflect the response are provided in the response.

Table 12-3: Responses to Comments Received

RESPONSES TO COMMENTS	
Comment No.	Response
GENERAL COMMENTS	
13-10b 13-14 20-3	The BLM, Kern County Planning Department, Kern County Air Pollution Control District, California Department of Toxic Substance Control, California Department of Fish and Game, California Regional Water Quality Control Board, and the U.S. Fish and Wildlife Service, which regulate the current RMC operations believe that the current system of unannounced site inspections is sufficient to ensure compliance with project conditions of approval and reporting requirements, and do not believe that it is necessary to have a government "compliance officer" on site at all times. RMC is required to report any wildlife fatalities at the current processing facilities monthly, and to date the BLM and Kern County believe RMC has complied with these agency reporting requirements.

RESPONSES TO COMMENTS	
Comment No.	Response
13-16 20-5	Although the public has a significant role to play in agency decision-making regarding the reclamation of mining operations, the existing laws and regulations make it clear that the agencies, make the final decision regarding reclamation. RMC conducts periodic public tours of its existing mining operations, and anticipates continuing this practice. All reclamation plans, inspection reports, and other information regarding reclamation submitted to the agencies is available at the agencies' offices for public inspection, and the BLM and Kern County are always receptive to public comment regarding reclamation.
16-3	RMC has proposed environmental protection measures as part of the project to address these issues; please refer to Section 2.3 of the EIS/EIR for a complete discussion.
18-1	The CEQA-mandated Mitigation Monitoring and Reporting Program (14 CCR 21081.6) is required and should be adopted at the time of approval of a project, and is not part of the EIR itself. The BLM National Environmental Policy Act Handbook (H-1790-1) requires that, consistent with Council on Environmental Quality regulations (40 CFR 1505.2(c)), the agency document required mitigation and monitoring in its Record of Decision approving the project. Both of these documents are available to the public.
18-3	The EIS/EIR has been revised to more clearly indicate which of the identified impacts are considered significant.
18-11	The NOI was published in the Federal Register as required by law. There are no requirements to distribute the NOI to a specific mailing list. Since the intent of the Federal Register Notice is to inform the entire public, not just a specific list.
18-12	Only a portion of Appendix F of the EIS/EIR ("Estimated PM_{10} and Air Toxic Emissions and Impacts Assessment") was distributed with the Draft because the entire report was too voluminous and because complete copies of the report, as well as other documents referenced in the Draft EIS/EIR and not included as appendices, have been made available to the public at the Ridgecrest BLM office since the Draft EIS/EIR was distributed and are available at the Kern County Planning Department. However, copies of the tables and Appendices A and B of Appendix F of the EIS/EIR have been added to the Final EIS/EIR.

RESPONSES TO COMMENTS	
Comment No.	Response
DESCRIPTION OF PROPOSED ACTION	
Previously Approved Operations	
Waste Rock Stockpiles	
11-1	Some mine tailings (which some people call "mining slime") from historic mining operations conducted before RMC's existing operations commenced are found in the Descarga area. The Rand Project will cover a majority of these tailings under waste rock, which will reduce emissions of windblown dust. No evidence exists that current RMC mining operations have contributed to any subsurface contamination.
Chemical Characteristics	
26-2a 26-2b	Representative samples of ore and waste rock were collected for analysis of acid generation potential and net neutralization potential. Six (6) samples were collected from oxidized ore and waste, four (4) samples were collected from mixed oxidation state ore and waste, and four (4) samples were collected from unoxidized ore and waste. An additional six (6) samples were collected as part of the Baltic Mine project. All samples were collected from drill holes; sample elevations ranged from 4,140 feet in oxidized ore to 3,300 feet in unoxidized waste. The sample elevations would include materials at and below the projected pit bottoms. Elevations of the samples and their oxidation state have been added to Tables 2-3 and 2-4 in the EIS/EIR. Analyses of the Net Neutralizing Potentials of ore and waste rock indicated a minimum value of >12.5 and a maximum value of >84.4. These values, along with very low sulfur content (maximum value of 0.34 percent in unoxidized rock below projected pit bottom) and high inherent pH (average value of approximately 8.4) indicate a substantial excess of basicity. Even with potential acidic rainfall of pH 5.0, the acidity would be neutralized upon contact with waste rock materials. In addition, despite oxidation and contact with surface waters over periods of several million years, the ore and waste rock have maintained their high pH values. Although arsenic is present in the ore and waste rock, most naturally occurring forms of arsenic have very limited solubility above a pH of 5.0. When this fact is combined with the normal dearth of surface water and the waste rock stockpiles' lack of acid generating potential, no deleterious impacts to any surface or ground waters in the Project area from leachate are anticipated.

RESPONSES TO COMMENTS	
Comment No.	Response
	Ancillary Facilities
7-1	RMC heap leach pads and ponds are designed as zero discharge systems. No water is discharged from the leach process, and all leach solution, after percolating through the heaps and piping through the carbon process cells, is "recycled" back to the heaps. Due to evaporation, makeup water is continuously added to the heaps. The only water which enters Fiddler Gulch from the Rand Project area is relatively minor amounts of natural run-off from undisturbed areas after storm events.
16-5b	Comment noted.
26-5b 26-5c	All hazardous materials used for the existing RMC operations are stored in areas with secondary containment and limited access, consistent with applicable federal, state and local requirements. Containers are inspected for leakage on a daily or weekly basis depending on the type of chemical and location. A Spill Prevention Control and Countermeasure Plan was prepared for the existing RMC operations in December 1994, and a Hazardous Materials Business Plan and Inventory Update (dated April 1994) for the same operations was prepared pursuant to Chapter 6.95 of the California Health and Safety Code and submitted to the Kern County Fire Department.
	Proposed Action
	Introduction
18-13	The 1,020-acre value mentioned in Appendix H of the EIS/EIR was based upon preliminary estimates of the maximum surface disturbance from the Rand Project and is irrelevant to the analysis contained in this report. The correct value for Rand Project surface disturbance is the 511 acres indicated in the text of the EIS/EIR.
	Waste Rock Stockpiles
23-2	No buildings or other structures over 150 feet tall would be constructed by the proposed action and, therefore, construction would not be subject to FAA Part 77 regulations. Waste rock stockpiles may eventually be piled higher than 150 feet above preexisting ground surface, but should pose no hazard to low-flying aircraft since they would be identified by aircraft radar as normal extensions of the ground surface.

RESPONSES TO COMMENTS	
Comment No.	Response
	Ore Processing Facilities
14-1	All ponds for the Rand Project are designed to be below the height and capacity requirements of the Division of Safety of Dams.
18-5 26-1a 26-1b	The proposed leach pad liner and vadose zone monitoring system is described in both the EIS/EIR and in the Report of Waste Discharge for the Rand Project previously submitted to the California Regional Water Quality Control Board, Lahontan Region (CRWQCB). This engineered alternative and monitoring system was accepted by the CRWQCB as meeting or exceeding applicable performance standards when used in the Baltic Project leach pad, and is consistent with the performance goal addressed by the prescriptive standard. The CRWQCB will determine whether or not to approve this proposed liner system, and what, if any, conditions to apply, when they consider approval of a Waste Discharge Order once the CEQA EIR has been certified.
26-7	If a 100-year storm event were to occur and storm overflow ponds were to be filled with rain water and process solution, the accumulated solutions would be gold-bearing and would be recycled back onto the heaps until evaporation reduced the amount of water to normal operating levels.
26-5a	Spent carbon is sent to an off-site processor for re-processing. Chemical containers are either disposed of at a landfill authorized to accept this waste or returned to the chemical manufacturer for reuse. Information regarding how and where the chemicals are stored prior to off-site disposal has been added to Section 2.2.5.5. of the EIS/EIR.
	Ancillary Facilities
	Water Supply
5-1 8-1	Pumping water uphill from Fremont Valley to the project area increases its elevation head, but does not otherwise alter the water to any significant extent. Water pumped from Fremont Valley is used within the project area; process water is consumed and not released, and would therefore not be capable of impacting waters in either the northeast Fremont Valley or Cuddeback Lake.

RESPONSES TO COMMENTS	
Comment No.	Response
27-1 27-8a	Proposed water consumption by the Rand Project is shown in Table 2-10 of the EIS/EIR. RMC heap leach pads and ponds are designed to be zero discharge systems. Water consumption at the facility is predominantly due to absorption within the heap and evaporation. No water is discharged by the leach process, and all leach solution, after percolating through the heaps and piping through the carbon process cells, is "recycled" back to the heaps. Due to evaporation, makeup water must be added to the heaps.
Chemical Storage	
16-8	The likelihood of a hazardous materials spill in the Descarga area adversely affecting off-site areas is very small. See also Responses to Comment Nos. 26-5b and 26-5c.
Roads	
26-6	Only sodium lignosulfonate is currently proposed as a chemical dust suppressant. As described, sodium lignosulfonate is a non-toxic, non-hazardous, biodegradable co-product of cellulose production from trees. Due to its cost constraints, it is only applied in quantities sufficient to suppress dust, and no runoff occurs. If applied sodium lignosulfonate is washed off of the project roads during a storm event, the runoff would contain only very dilute concentrations of sodium lignosulfonate, which would be readily and rapidly biodegradable. No surface waters exist in the project area which could be degraded by these dilute concentrations.
Ditches and Surface	
27-3	The new drain pipes under U.S. Highway 395 are located several miles north of the project boundary and would not be impacted by any project activities.

RESPONSES TO COMMENTS	
Comment No.	Response
	Reclamation Plan
9-5 25-1a 25-1b	Historic land use within the Rand Project area over the last 100 years has consisted of mining, grazing, off-road recreation, and wildlife habitat, and the reclamation plan recognizes that these activities, including potential future mining, are expected to continue into the future. Reclamation consistent with a Level One goal is believed to be appropriate for the mine pit; reclamation of the pit area, especially the highwalls, consistent with Level Two (regrading and revegetation) would be technically difficult, potentially a safety risk, and would not result in increased habitat for wildlife. Gradual pit wall erosion would occur naturally and produce a similar effect. Any eroded materials would be contained within the pits and, due to the topographic setting of the pits, would not be visible from any key observation point. No erosion of soil from areas surrounding the pit into the pit area is likely to occur. The text references to the Surface and Mining Reclamation Act and implementing regulations have been modified as suggested.
9-7 13-1	Specific criteria for the transplantation of golden cholla, beavertail cactus and other species to be transplanted are to be provided to the BLM and Kern County in required annual reports of previous and proposed reclamation activities. In the Rand Project area, transplanting experiments have indicated that non-articulated Joshua trees less than 4 feet tall are most likely to survive transplantation. However, since nurseries and other authorized individuals or groups would be allowed into the project area to salvage all other Joshua trees, some portion of the trees between 4 and 10 feet tall would also likely be salvaged and transplanted. There does not appear to be any justification for not removing some Joshua trees from the site, when removal may aid in their survival. RMC's proposed biannual monitoring allows the passage of sufficient time to be able to observe changes in vegetative regrowth between monitoring events.

RESPONSES TO COMMENTS	
Comment No.	Response
24-7 25-2a	"Final" seed mixtures will be approved by Kern County and the BLM based in part on the data from the ongoing test plots. Native or indigenous species would be used wherever possible or practical, and RMC may collect seeds from the project area to use in on-site trials and during final reclamation. However, because growing conditions in the re-soiled areas may not be identical to those in undisturbed areas, other BLM- and Kern County-approved vegetation species may be used because they provide better vegetative cover more quickly, which would benefit efforts to prevent soil erosion from wind and stormwater runoff. The reference to "final" seed mixtures in Table 2-14 header has been corrected to show that the seed mixtures are preliminary.
13-2 13-7b	As discussed in Section 2.3.7.4. of the EIS/EIR, regrading of the rinsed heaps will crown the tops to prevent water pooling, ponding, and erosion, while the sides will be regraded to an overall 2H:1V slope. Although most benches will be regraded, certain benches may remain. The waste rock stockpiles would be constructed with overall 2H:1V slopes.

RESPONSES TO COMMENTS	
Comment No.	Response
24-6	The Reclamation Plan specifies that the heaps will be reclaimed by RMC through detoxification, regrading and revegetating in place. Heap leach detoxification methods for the Rand Project have been submitted by RMC to the California Regional Water Quality Control Board, Lahontan Region (CRWQCB) in a preliminary Closure and Post Closure Maintenance Plan, which the CRWQCB has indicated is acceptable. This plan specifies that rinsing of the heap will be considered successful once cyanide concentrations in the effluent rinse water reach acceptable levels (typically 0.2 mg/l WAD cyanide and 1.0 mg/l total cyanide). As discussed in the EIS/EIR, should rinsing, oxidation and natural degradation alone not successfully lower cyanide concentrations in the effluent rinse water, a neutralizing agent may be added to the rinse water to accelerate cyanide degradation. In addition, the EIS/EIR indicates that existing regulations provide for variances if certain conditions are met. Because the Rand Project ore placed on the heaps is not crushed, the ore will vary in size but will generally be larger in size than crushed ore. As a result, the Rand Project heaps will be less likely to produce preferential flow paths and "blind offs" than crushed ore. After rinsate analyses indicate acceptably low cyanide levels, samples of the rinsed ore from representative depths and locations must be obtained by drilling and analyzed to verify that detoxification has been successful. The heap will be considered detoxified only if analyses of the rinsed ore samples demonstrate acceptably low levels of cyanide.

RESPONSES TO COMMENTS	
Comment No.	Response
25-2b 25-2c 25-2d 26-9	The specific standards for success of the revegetation effort are presented in Section 2.3.7.5.1 of the EIS/EIR. Baseline vegetation studies were completed for the Rand Project area prior to mining; they are presented in Appendix G of the EIS/EIR. However, specific studies to determine project site vegetation density and diversity would be completed prior to the initiation of project construction activities. The proposed specific revegetation criteria for vegetation density and diversity are believed sufficient to also generally indicate vegetation cover and species richness. The 21 percent revegetation density criteria chosen for the Rand Project Reclamation Plan was previously used and approved for Castle Mountain Gold Mine. However, a 35 percent revegetation criteria for vegetation cover has been added to Section 2.3.7.5.1. of the EIS/EIR The proposed biannual monitoring allows sufficient time to observe changes in vegetative regrowth between monitoring events; however, annual reports will still be made to the BLM and Kern County on the status of reclamation, including the types and amount of reclamation completed in the previous year, the planned reclamation activities for the next year, and the status of the ongoing vegetation test plots.
9-3 9-6	Erosion has not historically been a significant concern during the ongoing reclamation of existing disturbances within the Rand Project area. A mitigation measure recommended in the EIS/EIR requires RMC to prepare and submit for approval of the BLM and Kern County an erosion and sediment control plan; the CRWQCB has also expressed a desire to review and approve the plan.

RESPONSES TO COMMENTS	
Comment No.	Response
16-1 16-2 25-3a 25-3b	To ensure that reclamation is completed, reclamation bonds are required by the BLM, Kern County, and the CRWQCB; these bonds and other financial assurances are discussed in Section 2.3.8 of the EIS/EIR. The CRWQCB requires a bond which is fixed at the estimated final cost for heap leach detoxification and reclamation. The estimated costs for physical reclamation presented in Table 2-15 are believed to be reasonable estimates of the total costs, including both wages and equipment, based on current rates. However, because the project will be constructed in phases, and concurrent reclamation will be completed, the BLM and Kern County will allow for an adjustable bond covering the costs for reclamation of the disturbance to that date which has not yet been reclaimed. However, because of the variability of these activities, it is impossible to determine at this time what the appropriate amount of the bond would be in any future year. RMC would complete the reclamation to the identified standards, and BLM/Kern County would determine when reclamation efforts were completed prior to bond release by these agencies. The referenced Colorado Summitville Mine has unique environmental problems because of its location at extreme altitudes (between 11,300 and 12,300 feet above sea level), high precipitation rates (400 inches of snowfall per year), and high acid generating capabilities. The RMC deposits would not be subjected to similar environmental and geological conditions.
Other Environmental Protection Measures	
18-2	As indicated in the EIS/EIR, RMC has committed to comply with the requirements of the U.S. Fish and Wildlife Service Biological Opinion as part of the proposed project. Because these environmental protection measures are part of the proposed Rand Project, the EIS/EIR does not consider them as "mitigation measures," and they are not appropriate to present in the list of mitigation measures in the Executive Summary.
18-4	The environmental protection measure to cease activities in the vicinity of any discovered cultural or paleontological resources is a typical requirement of the BLM which RMC has simply agreed to in advance. Because there are few sensitive cultural resources in the Rand Project area, and little likelihood of any undiscovered resources, the BLM believes that no special training or monitors are appropriate.

RESPONSES TO COMMENTS	
Comment No.	Response
13-3a 20-2a 25-3c	NEPA requires BLM to select a preferred alternative as a result of the EIS process. After careful consideration, BLM selects the alternative that best meets its mission and goals. BLM's goal is to promote multiple use management of the lands under its management. One of BLM's goals is to allow resource extraction and utilization while, on balance, providing "no net loss" to the public regarding the post-mining productivity of the land i.e. rather than have a Passive Post Mining Land Use BLM management program, it will become an Active Post Mining Land Use BLM management program that will add personnel and operational burdens that would translate into increase budgetary requirements for monitoring and compliance. In addition, consideration must be given to the negative perception reflect to the public regarding the impact to taxpayers who will be asked to fund reclamation of future abandoned mines. RMC, in its effort to meet BLM's goals of "no net loss" to the productivity of the land, has integrated an off-site environmental management and mitigation plan into their overall Rand Plan of Operations/Proposed Action. RMC has proposed to mitigate (reclaim) any residual impacts (disturbance) to public lands reclaimed to Level 1 guideline, as discussed in the proposed reclamation plan by the current proposed Rand Project after completion. RMC, in consultation with BLM, will reclaim surface disturbance and or/perform other environmental and safety remediations in the Rand Mountains Area or adjacent vicinities in order to meet or exceed the number of acres not reclaimed at the Rand Project under this current proposal. Even though this proposed reclamation activities will not directly benefit lands within the Rand Project it would provide off-site efforts to increase productivity of lands previously disturbed by mineral exploration and development in the same ecological unit (adjoining watersheds and canyons of the Rand Mountains).

RESPONSES TO COMMENTS	
Comment No.	Response
13-3a 20-2a 25-3c con't	Coincident with benefits to vegetation wildlife habitat and multiple use of the public lands of the proposed off-site mitigations, there would be a reduction of impacts of surface disturbance associated with mineral exploration and development on visual, soil/erosion and surface water drainage patterns. RMC will enter into an agreement with the BLM that outlines the objectives, methodology, schedule and monitoring provisions of the off-site mitigation plan before project approval.BLM has determined in the DEIS/EIR that the proposed action with its construction, operation and environmental components, on a whole, best meets BLM's mission. Details of the off-site mitigations efforts can not be fully outlined or committed to at this stage of the process. What can be committed to at the decision stage is the roles, responsibilities and the objectives of the off-site mitigation/reclamation plan, which are: The amount of acres of off-site mitigation/reclamation would be equal to and compensate, both in quantity and quality, for any acres on public lands reclaimed to Level 1 guidelines, as discussed in the proposed reclamation plan, after completion of the Rand project under this proposal. Off-site reclamation activities would conducted and judged by the same standards as on-site reclamation activities. Setting these performances standards at this stage allows RMC and BLM flexibility in designing specific techniques, over the short-term, in reaching the desired goals.

RESPONSES TO COMMENTS	
Comment No.	Response
	ALTERNATIVES
	Preferred Alternatives
13-3b 20-1b	As part of its interdisciplinary review and analyses, BLM staff has identified a range of alternatives to the proposed action. Within this range a "reasonable" number was selected that passed initial screening criteria. These were the proposed action and the No Action Alternative. The determination was made that selection of other alternatives was limited either by laws, regulations, economics. In addition, the preexisting nature of the mining activities limited alternative location sites for ancillary facilities due to obvious negative environmental impacts of disturbing new lands. So further analysis throughout the EIS of other alternatives did not seem logical. BLM's staff analyses indicated that selection of the partial backfilling alternative would not completely eliminate any significant impacts of the Proposed Action nor would it substantially reduce impacts to a level less than significant. Partial backfilling would result in direct benefits to the resources within the immediate site (return of soils and vegetation), as compared to the Proposed Action. On a broader/regional scale, however, the benefits to the adjacent watersheds from the proposed off-site mitigations (proposed by RMC) would outweigh the any on-site ones resulting from the partial backfilling alternative. Therefore, selection of the partial backfilling alternative, on balance and on a regional scale, would result in increased short and long-term environmental impacts to the resources present. The partial backfilling alternative mainly reduces the size and volume of the components causing the impacts but does not eliminate the impact as a whole. The partial backfilling alternative would result in both positive and negative impacts on the environment. The benefits to the land would be: 1) eliminating a potential hazard of the pit wall/rim; and 2) providing for the establishment of additional acres of land surface that would be revegetated and 3) contribute to the eventual long term (decades) restoration of pre-mining surface drainage.

RESPONSES TO COMMENTS	
Comment No.	Response
13-3b 20-1b con't	Adverse impacts would result from the following: 1) extending operational impacts on the environment relating to transportation, earth-moving and energy consumption for a number of years, and 2) hindering the recovery of future mineral recovery. Selection of the partial backfilling alternative, on balance, falls shorter, in meeting BLM goals, than the Proposed Action (with off-site mitigation) and providing benefits to land management in the Rand Mountains. This is mainly attributed to the fact that rather than concentrate mitigation efforts in one area, in this case mine pit, mitigations and reclamation efforts would be spread over a larger area and would benefit other ecological units in the Rand Mountains. So on balance, Land management would benefit.
13-3b 20-1b con't	As indicated in the Responses to Comment Nos. 13-3a, 20-2a, and 25-3c, identification of the specific lands to be mitigated as off-site mitigation is not possible at this time, and further NEPA documentation may be necessary prior to implementation of the off-site mitigation for the open pit. Additional language has been added to Section 3.3.3. of the EIS/EIR to better support why no there are no reasonable backfilling alternatives (see Response to Comment No. 13-5; Response to Comment Nos. 26-3b, 26-3c, 26-11a, and 26-11b; and Response to Comment No. 26-10). The Preferred Alternative is the Proposed Action, including all of the RMC-proposed environmental protection measures, <u>plus</u> the application of the mitigation measures proposed in the EIS/EIR; the impacts which may result from the Preferred Alternative are enumerated in Chapter 7 of the EIS/EIR.

RESPONSES TO COMMENTS	
Comment No.	Response
	Eliminated Alternatives
13-4 16-10 18-22	Additional language has been added to Section 3.3.1.3. of the EIS/EIR to better support why no reasonable water supply alternatives exist for the project. Although Cuddeback Lake was rejected as an alternative supply in part because the entire well field production area and pipeline route to the Rand Project area has been designated as critical tortoise habitat by the U.S. Fish and Wildlife Service, analysis of existing Cuddeback Lake wells have demonstrated that wells drilled in the Cuddeback Lake area would not provide a reliable source of water for the Rand Project because they would be capable of only limited production rates, and would produce water of questionable quality. Acquiring agricultural water rights from sources northeast of Koehn Lake and retiring them to compensate for production from the RMC wells would likely increase, rather than decrease, the potential for poorer quality water to move from the Koehn Lake area towards the RCWD wells since as the agricultural pumping is decreased, the associated cone of depression would diminish, causing a eastward shift in the TDS isobars between the agricultural wells and the RCWD wells (see Response to Comment Nos. 16-9, 16-25, 18-16, and 22-1).
26-10	Text has been added to Section 3.3. of the EIS/EIR which summarizes the alternatives which were discussed and eliminated in the Baltic EIS/EIR, indicates where the Baltic EIS/EIR is available to the public, and provides the applicable State Clearinghouse Number. Incorporating the entire section of the Baltic EIR/EIS into the Rand EIS/EIR as an appendix is not considered warranted.
	Reduced Project
24-1	The abstract, provided as the second unnumbered page at the beginning of the Draft EIS/EIR, incorrectly stated that four (4) alternatives were analyzed in detail throughout the Draft EIS/EIR. The Proposed Action and the No Action Alternatives were the only alternatives analyzed in detail throughout the Draft EIS/EIR. Remaining alternatives, including Reduced Project Alternative, Facility Location Alternative, Partial Backfilling Alternative and numerous additional alternatives, were analyzed in sufficient detail to eliminate them from further consideration.

RESPONSES TO COMMENTS	
Comment No.	Response
	Backfilling
16-24	A discussion of basic differences between strip mining of coal deposits and open pit gold mining, and associated backfilling issues, are presented in Section 3.3.3. of the EIS/EIR.
13-5	The complete reference for NRC, 1979, *National Resource Council. Surface Mining of Non-Coal Minerals. Prepared by the Committee on Surface Mining and Reclamation, Report No. ISBN-0-309-0294202*, has been added to the EIS/EIR reference list. The referenced comparable California mine is the Castle Mountain Mine located in San Bernardino, California. The identified USDI, 1990a report referenced several documents prepared for California gold mining operations which estimated backfilling costs. At Castle Mountain, backfilling costs were conservatively estimated at $0.80 per ton, which would add between $65.00 and $130.00 dollars to the cost of each ounce of gold produced. An additional report, prepared by the Bureau of Mines, Western Field Operations Center, utilized a generic cost model which used a 0.055 ounce per short ton (oz/st) grade, a 2:1 strip ratio, 2,500-foot average haul distance, 75 percent gold recovery, and 65 percent backfill. Backfilling costs were estimated at $0.84/st in 1990 dollars for ore and waste, plus a 25 percent mark-up to allow for contractor's costs, for a total cost of $1.05/st. A cash flow analysis was then performed which used a $400/oz gold price and 15 percent rate-of-return compared to net present value. The results indicated that backfilling would render an otherwise profitable operation unprofitable. It should be noted that the gold grade used in that analysis is roughly twice the grade of the Rand project, which would make the Rand Project even more uneconomical, although RMC's strip ratio is slightly lower than the generic cost model.

RESPONSES TO COMMENTS	
Comment No.	Response
13-5 con't	Backfilling the 132 million tons of Rand Project processed ore and waste rock, at the nominal proposed $0.80/ton backfilling cost, would produce the reported $105 million dollar cost. Backfilling of waste rock alone (72 million tons) would add an estimated $57.6 million to project costs. Because of the limited environmental benefit from backfilling at the Rand project site, the significantly decreased financial viability of the project due to backfilling expenditures, and the loss of potential future mineral resources due to concealment of remaining mineralization, the backfilling alternatives were rejected. The discussion of the economic constraints to backfilling have been expanded in the EIS/EIR to include this information.
26-3b 26-3c 26-11a 26-11b	Because of the relatively low grade and unit value of the Rand Project ores, project viability is dependent upon minimizing the capital cost of project facilities (such as mine trucks and other equipment), maintaining a high mining rate, and maintaining a highly flexible mining plan which simultaneously develops all three (3) known orebodies. The proposed mine plan shifts equipment from pit to pit as required for mining and waste rock removal, and blasting, ore removal, or waste rock stripping may occur at any pit at any time. Because of these factors, simultaneous development of all three (3) pits is required, and sequential mining, with backfilling of previously mined pits, would not be economically or logistically feasible. Temporary storage of waste rock would cause a substantial temporary disturbance to the waste rock storage site's soils and vegetation which would not be completely mitigated by simply removing the waste rock. Although the topography could be restored to a near original condition, not all waste rock could be removed by large earth moving equipment, and revegetation would still be required. As discussed in Section 3.3.3.3. of the EIS/EIR, backfilling would result in the consumption of substantial quantities of water, electricity, and fuel, and result in the continued emissions of dust and other pollutants beyond that currently predicted under the proposed action. In contrast, as described in Sections 2.2.3.1 and 3.3.3.4. of the EIS/EIR, neither waste rock characterization studies, depth to groundwater measurements, nor visual impacts measured from key observation points indicate that any significant environmental or aesthetic impacts would result from the open pits. Waste rock stockpiles would be constructed with overall 2H:1V slopes which will be partially revegetated. This discussion of backfilling has been added to the EIS/EIR.

RESPONSES TO COMMENTS	
Comment No.	Response
RESOURCES	
Physiography and Geology	
5-2	The scale shown on Figure 4-3 is accurate.
9-1	Mine pit walls have been designed to provide safety to workers while allowing maximum economic extraction of the resource. Some sloughing of pit walls is likely to occur after cessation of mining; however, these materials would be contained within the pit. RMC will maintain pit wall stability consistent with applicable MSHA requirements.
9-2	As indicated in Response to Comment No. 13-2, the waste rock stockpile slopes will be at an overall 2H:1V slope. Some sloughing of the waste rock stockpile bench faces would gradually occur. However, RMC's geotechnical analysis of waste rock stockpiles indicates that the benches below these slopes, and the stockpile's overall 2H:1V slopes, would prevent any significant amount of material instability. Once the bench faces sloughed, they would eventually approach the overall 2H:1V gradient.
16-11	Figure 4-3 of the Draft EIS/EIR shows the general location of regional faults, as presented in Leonoff, 1989.

RESPONSES TO COMMENTS	
Comment No.	Response
	Hydrology
	Surface Water
21-1 26-12 26-13	As described in Section 5.1.4.1. of the EIS/EIR, in a worst-case scenario of a 1,000 year flood occurring with simultaneous power outages, process water may be discharged to the surface. However, this process water would be highly diluted by rainwater, and once discharged from the ponds would be quickly diluted to less than 1 ppm cyanide by the massive quantities of storm water. Stormwater flows are diverted around project facilities, which minimizes the potential for contamination of other surface water flows. Pursuant to proposed requirements of the CRWQCB, these surface stormwater flows will be sampled and the results reported to the CRWQCB. It is unclear how substantial wind erosion and transport of dust would occur within the pit area following the completion of mining, let alone these effects result in any impacts to groundwater quality. The indicated erosion and sediment control plan would be produced under a mitigation measure recommended in the EIS/EIR and submitted for approval of the BLM and Kern County; the CRWQCB has also expressed a desire to review and approve the plan. Other management practices discussed in the EIS/EIR are appropriate for preventing contamination of surface or groundwater.

RESPONSES TO COMMENTS	
Comment No.	Response
18-6 24-3 26-4	The EIS/EIR text has been clarified to state that each Rand Project pit drains only the area of the pit itself, and there would be no substantial inflow of water into any pit from drainage channels or the surrounding terrain. Any small drainages which might otherwise drain into and add water to any pit during storm events would be diverted around that pit. Stormwaters are also diverted around the waste rock stockpiles and heaps and thus, no impact to vegetation would be expected. Because of the high pH of wall rocks and low acid generating potential, no significant enrichment of metals within the ponded water would be anticipated before infiltration and evaporation dry the pits. RMC estimates that during a 100-year storm event of 3.57 inches of precipitation in 24 hours, approximately 1,900,000 cubic feet (about 44 AF) of water could enter the Yellow Aster Pit at its maximum configuration, reaching a maximum depth of 18 feet; 880,000 cubic feet (19 AF) would enter the Baltic Pit, reaching a depth of 5 feet; 880,000 cubic feet (19 AF) would enter the Lamont Pit, reaching a depth of 7 feet; and 530,000 cubic feet (12 AF) would enter the Satellite Pit, reaching a maximum depth of 4 feet. Based upon likely infiltration and evaporation rates, water would be expected to remain in the pits for less than one month.

RESPONSES TO COMMENTS	
Comment No.	Response
18-6 24-3 26-4 con't	Existing RMC facilities occupy portions of the uppermost reaches of three (3) local drainage basins: Lamont Valley; Fiddler Gulch; and West Valley (see Figure 2-4 of the EIS/EIR), and the proposed Rand Project facilities would be constructed in these same drainage basins (see Figure 2-9 of the EIS/EIR). During the operating life of the project, all rainfall which lands in the pits will be captured and held within the pit, and all rainfall which lands on the heaps will be captured and become part of the process water. Post reclamation, rainfall which falls in the pits would be captured. Thus, surface runoff from the Rand Project area after reclamation of the Rand Project will be slightly less (from the 132 acres of expanded pits) than the surface runoff which would occur if the Rand Project was not built. Because the Rand Project area occupies the uppermost reached of these drainage basins, the combined total of disturbance to waters of the United States from the existing facilities and the Rand Project is substantially less than 10 acres, and RMC has been informed by the CRWQCB that the project is not subject to requirements of the stormwater discharge permit system.
24-2	As discussed in Section 4.4.1.1. of the EIS/EIR, no springs, seeps or streams are present within the Rand Project area, nor are any found in the vicinity of the RMC wells located in Fremont Valley. In addition, no springs or seeps are known to be present immediately downstream of the Rand Project area. All surface flows in and around the Rand Project area are ephemeral and occur only during and immediately after precipitation events. No riparian habitat has been identified within or immediately adjacent to the Rand Project area. Because of the depth to the water table in the vicinity of the RMC wells, no impact to surface vegetation is anticipated from the production of groundwater.

RESPONSES TO COMMENTS	
Comment No.	Response
	Groundwater
13-6 20-4	The location of the Garlock Fault is shown on each of the water level elevation figures presented in the Appendix E of the EIS/EIR. The fault runs approximately northeast-southwest, parallel to the northwest edge of the Fremont Valley, and separates the well RMC #4 well on the northwest side of the fault from essentially all of the other wells, which lie on the southeast side of the fault. Although a fault <u>may</u> be a barrier to groundwater movement, sediment offset alone across a fault would not likely result in different water levels across the fault. However, if the fault <u>is</u> a barrier to groundwater movement, different water extraction and recharge rates on opposite sides of the fault could produce different water levels. The hydrologic model does not assume that the Garlock Fault is a barrier to groundwater flow. This is a conservative assumption, since this results in an <u>over-estimation</u> of the potential impact of RMC pumpage of well RMC #4 northwest of the fault to the RCWD wells located southeast of the fault if the fault is a barrier to groundwater movement.
18-21b 27-6a	Based only on data taken at the two (2) end points, water levels fell 17 feet between 1978 and 1994 in well RCWD-1 (an average of 1.0 foot per year), and 42 feet in well RCWD-2 between 1979 and 1994 (approximately 2.8 feet per year). No additional data have been made public by the RCWD which would indicate the rate of water level decline during any portion of this time period, or to confirm water level drops of 3 to 5 feet per year in these wells.
16-12 18-21c 22-2 27-2	Computer modeling of the groundwater aquifer in Fremont Valley does not indicate that the proposed pumping of water for the Rand Project will result in any substantial impact to either the water levels or groundwater quality of the RCWD wells. The EIS/EIR proposes that RMC conduct a regular monitoring program for water levels and water quality in the RMC production and monitoring wells, which should be used in part to determine the accuracy of the model's drawdown predictions (see Responses to Comment Nos. 18-21a, 21-3, 27-8b, and 27-11). In addition, RMC funding of remedial action at the RCWD wells has been included in the EIS/EIR as a potential mitigation measure. Since it is highly unlikely that sudden, irreversible changes to water level or quality could occur to the RCWD wells from the Rand Project groundwater withdrawals, there appears to no rationale to require a bond from RMC at this time.

RESPONSES TO COMMENTS	
Comment No.	Response
18-14	Based on the time-drawdown plots (Figures C-1, C-3, C-4, and C-5 of Appendix C of Appendix E of the EIS/EIR), it is unlikely that the presence of impermeable boundaries affected any but the late time data from the well RMC #4 aquifer test. On semi-logarithmic time-drawdown plots, the presence of an impermeable boundary would result in a steepening of the drawdown plot. The slope of the line after the boundary is encountered would be twice the slope of the original line. This effect may be present in the later time data from wells RMC #4 and OW-1, but is not observed in other wells and does not appear to have affected the analysis of the well RMC #4 aquifer test. Aquifer test data from well RMC #4 were primarily used to estimate hydraulic conductivity in the portion of the basin north of the Garlock Fault, not in the central and western portion of the basin. Hydraulic conductivity in these latter areas was estimated based on specific capacity data from the RCWD wells and the agricultural wells (see Section 4.3 of Appendix E of the EIS/EIR). Finally, if higher hydraulic conductivity values had been used in the model as suggested by the comment, the projected impact of RMC pumpage would be diminished. Hargis + Associates chose to use the lower values of hydraulic conductivity to ensure that the model estimates were conservative.
18-15	The storage coefficient estimated from short-term aquifer tests in water table aquifers is typically lower than the actual storage coefficient. For this reason, a storage coefficient 0.04 was used in the model. As discussed in Section 4.3 of Appendix E of the EIS/EIR, this value is lower than some other estimates obtained from the literature, and represents a conservative estimate for the purpose of projecting drawdown.

RESPONSES TO COMMENTS	
Comment No.	Response
16-9 16-25 18-16 22-1	Available data indicate that groundwater levels in the vicinity of the RCWD wells are at least 80 feet higher than groundwater levels near Koehn Lake (see Figure 5 of Appendix E of the EIS/EIR), which results in a gradient towards Koehn Lake, away from the RCWD wells. Model projections show that this gradient is maintained, even in the higher pumpage scenarios (see Figure 16 of Appendix E of the EIS/EIR). Regardless of how the model is calibrated, it would not project the upgradient movement of brackish water from Koehn Lake toward the RCWD wells. Perhaps the commentors have confused the drawdown projections presented in Figures 7 through 14 of Appendix E of the EIS/EIR with the projected groundwater elevations presented in Figures 15 and 16 Appendix E of the EIS/EIR.
18-17	Hydrogeologic data are limited for the northeast Fremont Basin, and there is no question that the collection of additional data would be helpful in better refining the characterization of basin water use. However, neither CEQA nor common sense demands the undertaking of a comprehensive, basin-wide study to project the effects of a relatively minor increase in pumpage by a single water user. To allow for the uncertainties in the data, the hydrologic model presented in Appendix E of the EIS/EIR used conservative estimates, based on the best available data, of all key parameters. Thus, the model results represent a reasonable worst-case assessment of projected effects of increased pumpage, and provides sufficient information and analysis to understand the probable and potential effects of the proposed activities.
18-18	As with the other parameters used in the model, the model assumed a conservative value of 500 feet for aquifer thickness. It is likely that the actual aquifer thickness is much greater than 500 feet over much of the basin. The effects of a thicker aquifer would be to diminish the projected drawdowns from the proposed increased pumpage.

RESPONSES TO COMMENTS	
Comment No.	Response
18-19	It is a reasonable assumption that the perennial surface water in the western portion of Koehn Lake is fed by groundwater discharge from the regional aquifer. Considering the climatic conditions in the Mohave Desert, there is no other reasonable explanation for the existence of perennial surface water in the absence of any regular surface water inflows. In order to simulate the effect of this perennial water, the model applied a general head boundary condition along the western boundary of the model. As explained on Page D-2 of Appendix E of the EIS/EIR, this boundary condition approximates a constant head condition located approximately 17,000 feet away from the edge of the model domain. The flux entering the model is a function of the gradient between the model boundary and the point 17,000 feet away where the head is fixed. In the flat water table model, the inflow across the western boundary represents the water that would be removed from storage as the drawdown extended into the area beyond the model domain. This inflow is an artifact of the way in which the system was modeled with a flat water table as an initial condition. In the highest pumpage scenario (Case 4), the average rate of recharge and release from storage in the model was approximately 4,100 acre feet per year and the average rate of inflow into the western boundary of the model was approximately 3,400 acre feet per year. Considering that the cone of depression from the agricultural wells extends beyond the western boundary of the model (see Figure 14 of Appendix E of the EIS/EIR), the relative contributions from storage within the model and beyond the boundary are reasonable. The placement of the general head boundary at a distance 17,000 feet from the model domain minimizes the influence that the boundary has on projected drawdown.

RESPONSES TO COMMENTS	
Comment No.	Response
18-20	The model estimated that approximately 184 AF/yr would be recharged from the CPD dredge ponds over a 3-year period. We continue to believe that this estimate is reasonable. Further, because this volume of water is only approximately 0.5 percent of the total pumpage in the model for the 16-year simulation period, the effect of the CPD recharge is probably inconsequential to the model projections. We have reviewed the reference cited in the comment and find no support therein for the infiltration time estimate of 27 years. On the contrary, this reference presents the results of artificial recharge studies carried out by the California Department of Water Resources which suggest that a minimum of 1 ft/day of water may be recharged from artificial ponds constructed on distal portions of alluvial fans (Guymon, 1994, p. 94). Based on this rate, and assuming a porosity of 0.2, the estimated time required for the recharge to reach the groundwater table at a depth of 500 feet would be approximately 100 days. It is believed that the original estimate of two (2) years for recharge to reach the groundwater is conservative.
16-26 18-23 18-24 21-2 27-8c	Groundwater production in California is not subject to appropriation, and RMC currently has the legal right to produce the water necessary for its operations, just as does every other groundwater producer in the Fremont Valley. That the Fremont Valley basin is in an overdraft condition is not in dispute; however, to eliminate the annual overdraft of the basin every producer of groundwater in the basin, <u>including the RCWD</u>, would have to cease production, since the RCWD groundwater production rate alone exceeds the natural recharge of the basin. What appears more relevant is that modelling of RMC's proposed production of groundwater for the Rand Project using conservative parameters has shown that this proposed use should result in insignificant changes to water levels and quality in the wells of other water users in the Fremont Valley. The EIS/EIR also proposes that RMC conduct a regular monitoring program for water levels and water quality in the RMC production and monitoring wells, which should be used in part to determine the accuracy of the model's drawdown predictions (see Responses to Comment Nos. 18-21a, 21-3, and 27-8b).

RESPONSES TO COMMENTS	
Comment No.	Response
10-1 16-17 16-18 16-23	No waste water is discharged from the Yellow Aster Mine. The Mohr Pit referenced in the EIS/EIR is located east of the Rand Project area, and is not within the Project Area. Water pumped from the Fremont Valley to the Rand Project would ultimately evaporate and would not enter the Mohr Pit unless, as discussed in the EIS/EIR, a greater than 100-year/24-hour storm event occurs simultaneously with a 24-hour power outage, in which case stormwater possibly containing highly diluted flows from the heap leach facilities could enter the pit and infiltrate. However, because of the great depths to encountered groundwater below the Rand Project area, the high net neutralizing potentials of the ore and waste rock, and the high inherent pH of these rocks, it does not appear at all likely that any of this water could leach contaminants down to the water table (see Response to Comments No. 26-3a and No. 26-8. Because the Rand Project area is located approximately 6 miles east of, and almost entirely within a different hydrologic basin from, the RCWD wells, there is no realistic potential for contamination to the RCWD wells from a Rand Project-area spill. In addition, there is no known mercury or solvent contamination from any source in or near the RCWD wells. RMC does not use mercury in any of their processes.
27-6b	Chemical constituents of water sampled on the indicated dates from the RCWD wells and select RMC wells are provided in Table 3 of Appendix E of the EIS/EIR; all available data are presented. RMC has previously been unable to obtain access to the RCWD wells, and has been unable to sample or monitor the RCWD wells. RMC's proposed pumping rates are not expected to adversely affect the quality or quantity of water produced from RCWD wells.

RESPONSES TO COMMENTS	
Comment No.	Response
26-3a 26-8	Recently acquired information on the depth to groundwater below each pit has been added to Table 2-9 in the EIS/EIR. Below the Yellow Aster pit, groundwater was first encountered at an elevation of 2860 feet, which is approximately 640 feet below the projected final pit bottom. At the Baltic pit, groundwater was first encountered in a drill hole at an elevation of 3200 feet, or approximately 200 feet below the projected final pit bottom. At the Lamont pit, no groundwater was encountered in drill holes which extended approximately 400 feet below the projected final pit bottom. Based on the great depths to encountered groundwater below the projected bottom of each pit, the high net neutralizing potentials of the samples of ore and waste rock, the very low sulfur content of the unoxidized rock below the projected pit bottoms, and the high inherent pH of these rocks, it does not appear at all likely that any water which may temporarily pond in the pit bottoms could leach contaminants down to the water table.

RESPONSES TO COMMENTS	
Comment No.	Response
13-12 18-21a 21-3 27-8b 27-11	Section 6.4.2. of the EIS/EIR has been modified to require that RMC develop and implement a program to monitor water levels and quality in its groundwater production and observation wells prior to producing water for use in the Rand Project, and to continue to collect and report results to the BLM and Kern County for the duration of pumping groundwater for the Rand Project. The collected data is to be compared to projected drawdowns for these wells, and if the observed drawdowns exceed the projected drawdowns by 200-percent, RMC is to conduct additional hydrogeologic assessments in order to more accurately model groundwater drawdown. In addition, if the Rand Community Water District (RCWD) should determine that remedial action is necessary to mitigate the effects of a static water table decline in either well RCWD #1 or well RCWD #2, RMC shall contribute to the funding of the remedial action in an amount directly proportional to the amount of water RMC has pumped from the northeastern Fremont Valley as compared to the total amount pumped from the northeastern Fremont Valley by all groundwater producers over the applicable time period. RMC shall place the required funds into an escrow account when requested by the RCWD once RCWD has provided the following information to the satisfaction of the Kern County Planning Department: 1) well monitoring information to demonstrate that the static water level in either well RCWD #1 or well RCWD #2 has fallen to a level indicating a need for remedial action; 2) the budget for the proposed remedial action; and 3) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period. The required funds deposited into the escrow account shall be disbursed to the RCWD upon request once the RCWD has provided the following information to the satisfaction of the Kern County Planning Department: 1) the total cost of the remedial action; and 2) the annual groundwater production rates for all producers of groundwater from the northeastern Fremont Valley over the applicable time period. See also Response to Comment Nos. 16-12, 18-21c, 22-2, and 27-2.

RESPONSES TO COMMENTS	
Comment No.	Response
27-4 27-5	Major water users in the northeast Fremont Valley are described in Section 4.4.2 of the EIS/EIR and in Table D-1 of Appendix E of the EIS/EIR; recharge rates are described in Section 2.3 of Appendix E of the EIS/EIR. No recharge from RCWD, Boral Resources or RMC operations is likely nor was included in the modeling. Minor recharge of water produced from the agricultural wells northeast of Koehn Lake probably occurs, but the principal "artificial" recharge is from the Consolidated Placer Dredging (CPD) operations (see Response to Comment No. 18-20). Water consumption for the existing RMC operations is expected to begin to decrease in 1997 due to depletion of currently permitted minable reserves, completion of leaching of the pads and reclamation of the site. RMC operations have not increased the rate of pumping or consumption of groundwater from the CPD operations.
Air Quality	
16-7 16-13	The Descarga area wastes are historic tailings from the old Yellow Aster mine which were created in the 1930's or earlier, prior to RMC's involvement with the project. The Rand Project will cover a majority of these tailings with waste rock, which will substantially reduce any emissions of windblown dust.
16-14 16-16	Comment noted.

RESPONSES TO COMMENTS	
Comment No.	Response
13-10a 16-5a 16-6 16-15	The Descarga area tailings, from historic operations at the Yellow Aster mine, are considered a substantial source of windblown fugitive dust; a majority of these tailings will be covered with waste rock by the Rand Project. Air quality modeling, using EPA-approved models and emission factors, indicates that neither emissions of particulate matter (PM_{10}) from the existing RMC facilities nor the proposed Rand Project would result in ambient air concentrations of PM_{10} at any local "sensitive" receptor which exceeded either federal or state ambient air quality standards, nor result in any significantly impact to local health. As part of RMC's current operations, water sprays and/or chemical treatments are used to minimize the generation of dust from disturbed surfaces. Water, and/or an environmentally acceptable chemical dust inhibitor, is applied to the haulage roads, ore loading, and dozing operations in sufficient quantities to prevent significant emissions. Water is generally used in areas of active disturbance, while the chemical dust inhibitor, usually sodium lignosulfonate, is used in areas that are constructed for operations that continue for the life of the project, such as the permanent haul road. Operations are conducted to comply with permits granted by the Kern County Air Pollution Control District, including implementation of the program to minimize fugitive dust emissions. The Rand Project operations would be conducted in the same manner.
18-7	Table 4-8 has been updated with more recent data.
18-10	The principal source of fugitive PM_{10} emissions is the blasting of ore and waste rock in the pits. PM_{10} are dust particles which are so small that they behave much like a gas; they do not "settle out" of the air like the larger dust particles. During periods of relatively higher wind speeds, PM_{10} particles lofted into the air by blasting should be carried past the local communities and dispersed more rapidly than during periods of relatively calm winds.
19-1	The majority of Rand Project ore and waste rock would be placed on the proposed Lamont Valley heap leach and waste rock stockpile, which are located more than one and one-half (1½) miles south of the town of Randsburg and the same distance west of the San Bernardino County line. Because these facilities are located much further from the local residents than the existing RMC facilities, local residents should perceive substantially less in the way of impacts from these facilities than from the existing facilities.

RESPONSES TO COMMENTS	
Comment No.	Response
24-5	Air quality modeling (see Section 5.1.5. and p. 19 of Appendix F of the EIS/EIR) evaluated the potential impacts of the Rand Project on the existing Class I airshed located with 100 kilometers of the Rand Project area, and also evaluated the potential impacts to the Golden Valley Wilderness Area, which is a Class II airshed, the closest wilderness area designated under the California Desert Protection Act. Modeled impacts to the airsheds did not exceed PM_{10} increases allowable in a Class I airshed under PSD regulations. Impacts to areas further removed from the project should be proportionately less.
Vegetation and Range Resources	
9-4	Baseline botanical data for the Rand Project area, consisting of a sensitive floral species survey and a vegetation and baseline data assessment, is provided in the EIS/EIR as Appendix G. Ongoing baseline data collection (test plots) is being performed under existing Baltic and Yellow Aster reclamation plans, and test plots are currently located on the North Waste Rock Stockpile. The percentage standards for revegetation success identified in the Reclamation Plan will be applied to the pre-construction survey data to produce firm (numerical) standards.
13-13	Final revegetation seed mixtures will be determined, in part, from the data from the ongoing test plots. Native or indigenous species would be used wherever possible or practical, and RMC may collect seeds from the project area to use in on-site trials and during final reclamation. However, because growing conditions in re-soiled areas may not be identical to undisturbed areas, other BLM- and Kern County-approved species may provide quicker vegetative cover which would benefit efforts to prevent soil erosion from wind and stormwater runoff. See also Responses to Comment Nos. 9-7 and 13-1.

RESPONSES TO COMMENTS	
Comment No.	Response
	Biological/Wildlife Resources
13-11	RMC does not have a permit authorizing taking of migratory birds. As stated in Section 5.1.7 of the EIS/EIR, netting of the process ponds has been demonstrated effective at excluding migratory birds at other mines in the western United States. Floating covers are sometimes installed for other purposes (such as slowing the degradation of cyanide), but are not needed for these purposes by the Rand Project. However, floating covers are difficult to keep secured, especially in high winds. The use of netting, in the long run, is more effective at excluding birds.
18-8	Specific mitigation measures are proposed to eliminate any ponding or pooling of cyanide on the top of the heap and drainage and collection facilities; see Section 6.7. of the EIS/EIR.
27-9	Chukar is an introduced game bird species which is not threatened or endangered. Some chukar habitat will likely be disturbed until reclamation a revegetation are complete.
	Visual
13-15	As described in Section 2.3.7.4. of the EIS/EIR and in Responses to Comment Nos. 13-2 and 13-7b, regrading of the waste rock stockpiles and rinsed heaps will crown the tops, while the sides of the heaps will be regraded to an overall 2H:1V slope. Contouring and shaping of cuts and fills in these unconsolidated materials would create undulating land forms that are stable, do not allow for extensive pooling or ponding, and blend with the surrounding undisturbed topography. Sharp edges would be rounded and straight lines would be altered to provide contours which are visually and functionally compatible with the surrounding terrain. Mitigation proposed in Section 6.9. of the EIS/EIR is above and beyond that described as part of the Proposed Action.
13-7a	The two light areas in Photos J-2 and J-3 of Appendix J of the EIS/EIR are historic tailings from the old Yellow Aster Mine which were not created by RMC operations.

RESPONSES TO COMMENTS	
Comment No.	Response
13-7c 20-2b	Pits, processing facilities, and waste rock stockpiles are designed and located based on the geologic, topographic, engineering and economic constraints on the mineralization and surrounding lands. Visual effects are considered, but are not controlling. RMC would complete the reclamation of the Rand Project facilities in conformance with the Reclamation plan, and the BLM/Kern County would be responsible for determining if reclamation efforts were sufficient prior to bond release.
Land Use	
23-1	Language regarding military airspace operations authorized over the Rand Project area has been added to Section 4.11.1. of the EIS/EIR.
23-3	Language regarding the possibility of impaired use of the airspace over the Rand Project area by military aircraft from blasting, and a mitigation measure suggesting notification of the military of approximate blasting times, have been added to the EIS/EIR in Section 5.1.11.1. and 6.11. of the EIS/EIR.
24-4	Section 4.11.4. of the EIS/EIR has been updated to include current information about the status of wilderness areas established under the California Desert Protection Act.
Socioeconomics	
13-9	The socioeconomic effects of backfilling, or of the Proposed Action or any other proposed alternative, would not be discussed in Section 4.12, but instead in Chapter 5. As previously stated, the requirement of backfilling would not result in longer jobs and larger tax revenues over the Rand Project without backfilling. Instead, since backfilling would render the Rand Project uneconomic, there would be no jobs or tax revenues from the Rand Project at all.
16-4	We have been able to find no record of anyone living within the Rand Project area.
16-19 16-20 16-21	We have been unable to document the indicated declines in commerce in Randsburg area, in the lack of commercials being filmed, or in area antique shops closing down. Neither have we been able to document that the filming of commercials in Randsburg has been abandoned, nor that tourists are being accosted by drunk miners.

RESPONSES TO COMMENTS	
Comment No.	Response
16-22	RMC has continued to implement a policy which tests each potential employee for recent use of illegal drugs, and continues to test employees in circumstances when warranted.
27-10	Eighty-six (86) percent of the 150 RMC employees reside in either Ridgecrest or the Indian Wells Valley. Twenty (20) percent of the employees live in the Rand Communities. The number of employees living in the Rand Community prior to mine initiation is unknown.
	Noise
27-7b	Noise monitoring (see Appendix K of the EIS/EIR) indicates that blast noise is not present at levels which are likely to cause adverse health effects or damage to structures in the residential areas, and demonstrates that existing RMC operations are in conformance with Kern County's 65 dB DNL maximum outdoor noise exposure requirement. In addition, as pits deepen under the Rand Project, blast noise levels are likely to decrease significantly, as shock waves would tend to be absorbed by pit walls or deflected upwards.
	CUMULATIVE IMPACTS
18-9a 18-9b	The projects to be analyzed under the cumulative impact assessment were complete as of the date of the assessment. Changes as necessary to bring the analyses current have been made to Chapter 9 of the EIS/EIR.

CHAPTER 13
REFERENCES

13. REFERENCES

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CHAPTER 14
GLOSSARY

14. GLOSSARY

ACEC -	Area of Critical Environmental Concern.
AMSL -	Above Mean Sea Level.
AN/FO -	A mixture of ammonium nitrate and fuel oil, used as an explosive for blasting purposes.
animal unit month (AUM) -	The amount of forage necessary to sustain one cow and one calf, or its equivalent, for one month.
BLM -	See Bureau of Land Management.
barren solution -	Non-precious metals-bearing cyanide solution.
Bureau of Land Management -	The agency of the United States Government, under the Department of the Interior, responsible for administering the public lands of the United States.
CEQ -	See Council on Environmental Quality.
CEQA -	See California Environmental Quality Act.
CUP -	See Conditional Use Permit.
California Environmental Quality Act -	This act establishes the mechanism by which government agencies in California document and consider the environmental implications of decisions made by the agency. The act also contains substantive provisions with which the government agencies must comply.
California Regional Water Quality Control Board-Lahontan Region -	The California Regional Agency responsible for protection of the waters of the state in the Lahontan Region. This agency is responsible for implementing California regulations, through the issuance of Waste Discharge

Requirements, Waste Discharge Orders and National Pollution Discharge Elimination System permits, which regulate discharges to the waters of the state.

Conditional Use Permit - The permit issued by Kern County which authorizes certain activities in the county as a conditional use within certain zoned areas of the county, in this case the mining operation within an area zoned for agricultural and other uses.

cone of depression - The depression in a watertable or piezometric surface produced by pumping.

Council on Environmental Quality - Created by NEPA and given the responsibility for federal environmental policy development and the oversight of federal agencies implementation of NEPA. Responsibilities also include issuing regulations and other guidance regarding NEPA.

CRWQCB-LR - See California Regional Water Quality Control Board-Lahontan Region.

cyanide - A solid chemical compound (sodium or calcium cyanide) which is dissolved in water to form a solution suitable for the extraction of precious metals from ore by using a leaching process.

EA - See Environmental Assessment.

EIR - See Environmental Impact Report.

EIS - See Environmental Impact Statement.

endangered species - An animal or plant species which is in danger of extinction throughout all or a significant portion of its range (as defined in the Endangered Species Act Amendments of 1982).

Environmental Assessment -	An analytical document prepared under the National Environmental Policy Act that outlines the potential environmental effects of the Proposed Action and its possible alternatives and leads to a decision to prepare an Environmental Impact Statement or a Finding of No Significant Impact (FONSI).
Environmental Impact Report -	A detailed statement prepared under the California Environmental Quality Act describing and analyzing the significant environmental effects of the proposed project and discussing ways to mitigate or avoid the effects.
Environmental Impact Statement -	An analytical document prepared under the National Environmental Policy Act that discusses the potential significant impacts to the human environment of a Proposed Action and its possible alternatives. An EIS is developed for use by decision makers to weigh the environmental consequences of a potential decision.
fee land -	Land in which the United States government has conveyed the fee simple interest in the surface, and possibly the minerals, into private ownership.
geologic time scale -	See Appendix D.
heap leach pad -	A facility on which a pile of ore is placed in several layers, each approximately 25 feet in height. The pile is underlain by impermeable material to collect the leach solutions.
Kern County	Local Lead Agency responsible for implementing California Surface Mining and Reclamation Act (SMARA) and California Environmental Quality Act (CEQA) and approving Conditional Use Permit with

accompanying Reclamation Plan subject to conditions.

lode - A mineral deposit that is contained within bedrock, as opposed to a placer deposit.

Migratory bird - Means any bird, whatever its origin and whether or not raised in captivity, with belongs to species listed in Section 10.13 of the Migratory Bird Treaty Act (16 USC 701-718h), or which is a mutation or a hybrid of any such species, including any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of such bird or part, nest, or egg thereof. All birds are considered migratory with the exception of three (3); English sparrow (*Passer domesticus*), starlings (*Sturnus vulgaris*), and barnyard pigeons (*Columba livia*). The Migratory Bird Treaty Act makes no provisions for killing migratory birds.

NEPA - See National Environmental Policy Act.

National Environmental Policy Act - The act that established the procedures by which the environmental consequences of a decision by agencies of the federal government are analyzed and documented prior to the decision being made.

Negative Declaration - A document prepared under the California Environmental Quality Act which makes the finding from the initial study that the project will not have a significant adverse affect on the environment.

OHV - Off-highway vehicle.

open pit - The area from which ore and waste rock are removed.

PM_{10} -	Particulate matter that is less than 10 microns in diameter.
POO -	See Plan of Operation.
patented land -	A mining claim for which the United States government has conveyed the fee simple interest in the surface and minerals into private ownership.
placer -	A deposit of mineral resources which is formed by an alluvial process and contained within alluvial material.
Plan of Operation -	A document prepared by the proponent of any mining development of locatable minerals and filed with the Bureau of Land Management, which presents a detailed discussion of the proposed project.
precious metals recovery plant -	A plant and equipment used to extract the precious metals from the pregnant solution.
pregnant solution -	A precious metals-bearing cyanide solution which contains sufficient quantities of gold and silver that can be sent to the precious metal recovery plant to remove the precious metals from the solution.
project area -	Has the same meaning as Rand Project area.
Proposed Action -	A description of the project as proposed by the project proponent in the Plan of Operations and the Conditional Use Permit application.
public land -	Any land and interest in land owned by the United States within the states and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except: (1) lands located

on the Outer Continental Shelf; and (2) lands held for the benefit of Indians, Aleuts, and Eskimos.

Rand Project area - The 2,520 acres area identified in the Plan of Operations filed with the BLM and the CUP application filed with Kern County.

Reclamation Plan - A document submitted to the BLM and Kern County, the respective federal and local Lead Agencies, that details the specific measures to be taken by the project proponent to reclaim the project lands during mining operations and after mining and leaching have been completed.

SMARA - See Surface Mining and Reclamation Act.

solution ditch - An above-ground, trough-shaped structure that is lined with an impermeable material and engineered to convey cyanide solution from the heap leach pad to the solution pond.

solution pond - A bowl-shaped structure that is lined with an impermeable material and engineered to contain cyanide solution from the heap leach pad for processing in the precious metals recovery plant and subsequent recirculation to the heap leach pad.

Surface Mining and Reclamation Act - An act passed by the California legislature which prescribes the reclamation of mined lands within the state of California and directs the Counties within the state to review and approve a reclamation plan of each mining operation as part of the County's Conditional Use Permit process.

unnecessary or undue - In conjunction with the degradation of lands, describes activities which would cause environmental impacts greater than what would

normally occur for specific activities, or would be necessary to conduct specific activities.

WSA - Wilderness study area.

Waste Discharge Order - A permit issued by the California Regional Water Quality Control Board which governs the construction, operation and closure of the heap leach pad, process ponds and the precious metals recovery plant.

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